

# The Important Factors of Atrium Design in Shopping Centers:

Kourosh Mall and Laleh Park Shopping Mall in Iran

Reihaneh Hajmirsadeghi<sup>1</sup>

Department of Engineering, Faculty of Architecture  
Islamic Azad University, Shahriar, Iran  
Shahriar, Iran  
rs.hajmirsadeghi@iau.ac.ir

*Abstract*— Atriums play an important role as an identity former, offering spatial orientation in shopping mall architecture. The main aim of this study is to examine the substantial factors of atrium design, which bring a sense of place for shopping mall users. This study is quantitative in nature, reviewing two shopping malls located in the two cities in Iran: one is the Laleh Park mall of Tabriz, and the other is the Kurosh mall in Tehran. A total of 350 respondents were surveyed and the confirmatory factor analysis was carried out to identify main factors. The results indicate that the design factors considered by the visitors of the two shopping malls are atrium legibility, its decoration, the social image and interaction and the event ambience.

*Keywords*- Sense of place; atrium; shopping malls, design

## 1. Introduction

In the recent years, the number of shopping malls offering services for leisure activities has been on rise in western countries (Kusumowidagdo et al., 2016); however, according to Yusef et al., (2011), in the 2000s, "the development of such shopping centers slowed down", while "the establishment of enclosed shopping centers has rapidly grown in Asia" (Erdem et al. 2004). For instance, Dubai offers many exciting and thematic shopping centers as tourism attractions; as a result, this city has been also regarded as the shopping capital of the Middle East. In other countries of the Middle East such as in Iran, the number of shopping malls has increased due to the modern lifestyle of the Iranians in the large cities such as Tehran and the significant development of property and population. Many factors, such as environmental changes, cultural changes and technology development, encourage the increased use of public spaces in shopping centers for a variety of activities (Carr et al., 1992).

According to Carmona et al. (2010), public spaces in shopping centers are categorized as quasi-public spaces that have a low level of accessibility and openness. Atriums have a low degree of public function in shopping centers, because they are not meetings places in its broad sense, while atrium as a part of town space is essential to establish a positive image and maximize the effect of the sense of place (Kazemzadeh and Azadi., 2014). Currently, shopping centers' atriums serve as orientation centers and spatial identification apparatus for shopping centers in Iran. Atriums are also regarded as cultural activity centers for people to carry out social

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activities or to hold product exhibitions. Shopping centers serve as a place not only to purchase things but also to socialize in the atriums. In the recent years, due to the increased use of atriums, it is necessary to focus on their design aspects. The unique characteristics of atriums as places are realized in their physical and social settings strengthening both the spatial functions and the social ones of these atriums. The successful use of an atrium as an orientation/recognition center, as well as a socialization center, defines a sense of place within a shopping center. Unlike a large number of shopping centers in the Middle East, there are a few studies on those atriums which provide a sense of place by focusing on their interior design and architecture. With particular focus on the environmental behavior, the studies on shopping areas have usually focused on the atmospheric effect of shopping malls or on their interior elements, e.g. music, lighting, etc. The shopping surroundings are often related to the desire for exploration and patronage. However, there were a few studies on the relationship between the shopping environment and the sense of place, particularly in case of atriums.

The main objective of this study is to determine the atrium setting factors that give a sense of place to shopping centers. In this regard, this study strategically analyses the atrium setting in regards to creating a sense of place, which is necessary for designers, managers and property owners, as they develop and plan for activity centers.

## 2. Theoretical background

According to Carmona et al. (2010), an atrium is a public space managed by a private organization, categorized as quasi-internal public spaces. This kind of public spaces is commonly found in post-industrial cities (Akkar, 2007). Quasi-internal public spaces have lower accessibility points than other public spaces managed by the government; though, they still meet physical, social, economic, and esthetic ends. Similar to other public spaces in shopping centers, atriums also have partial orientation. In some major cities, a shopping center functions as a transportation and circulation connector. Shopping centers are now considered urban public spaces and even actual representatives of small cities.

Public spaces are a part of city architecture, if we consider it in the context of urban-scale shopping centers. Five elements which shape the city are nodes (activity centers), edges (boundaries), paths (tracks), districts, and landmarks (Lynch, 1960). Shopping centers are limited in scale and also in its districts; however, they have edges or geographically specific land markers. These markers provide access to city circulation pathways, which may play the role of nodes connected to other nodes, when one arrives in the city; the architecture of these markers is similar to a city landmark. Shopping malls eventually serve as an alternative to city centers, since urban essentials are embodied in the interior elements of shopping centers, presenting the illusion of a city. Public spaces in shopping centers deliver a direct economic service, as they are dependent upon the private ownership and scale dissimilarity in the urban and architectural growth. The city elements do not lend itself to direct comparison. Several researchers recommend adapting the elements of a city, discussed in Lynch's theory (1992), which indicates the presence of legibility in the architecture of shopping centers. Furthermore, legibility is one of the reasons that create spatial awareness, which plays a role in the emergence of a sense of place from the point of view of spectators. In the context of this research, the atrium design of a public space in shopping centers provides legibility for a shopping center. During the planning process, private management conceptualizes atrium design as a part of the whole architectural framework of a shopping center to actualize legibility (Gardestat, 1989). A place is a combination of physical and social environments, both included in atriums (Kusumowidagdo et al., 2016). Consequently, an atrium as a place does not only have mathematical dimensions to be calculated and standardized, but also reflects a particular environment shaped from their physical atmosphere, interior design, and social surroundings, which in total make an experience. Being in an atrium provides the experience to the senses and serves as a stimulus for an integrated experience. The shopping environment can provide a sensation for visitors, because the role of the conditioned shopping environment is to enable visitors' interaction, to create spatial identification in their minds, and to add value to shopping activities (Kusumowidagdo et al., 2016). The conditioning factors should be well planned to create an association between the visitors and the shopping center.

Architectural aesthetics encompass forms, scale, colors, textures, and other accessories used to describe or decorate the space. Layout, signage, and comfort level are functional aspects that should also be considered. In regards to these three aspects (namely layout, signage, and comfort), the tangible aspects entail not only interior

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aspects but also acoustics, which comprise ambient factors (Baker, 1986). According to Wee Tong (2007), ambient factors consist of cleanliness, lighting, air conditioning quality, scent, and good acoustics for the choice of music. Good acoustics can also minimize sound transmission throughout the air and through the shopping center structure. Furthermore, music can affect visitors as a mediator for a variety of age groups (Gulas & Schewe, 1994). Lighting consists of natural and artificial lighting; however natural lighting is more frequently observed. All these physical and ambient elements ensure the comfort level of visitors inside a shopping center. Marketing and promotional departments play an important role in raising the number of visitors in shopping malls. Attractive programs and events are held to encourage visitors as much as possible and thus to bring the traffic flow and visitor mass. The attendance of other visitors can influence crowd density. The crowds in an event held in a shopping center can be perceived as positive, attracting other visitors to join the event. Witnessing such an event, other visitors with similar lifestyles feel comfortable and safe (Astuti & Hanan, 2012).

In regard to the physical environment that forms the space, the element characteristics that affect the sense of place are the size of the setting, its proportion, scale, distance, diversity, texture, ornament, color, smell, sound, temperature, and visual variety (Steele, 1981). These physical element characteristics provide the definition, concept, and identity of a place. In addition to these elements, other visitor behaviors and various social conditioning tools also affect the sense of place. Both the physical and social order of a place shape its legibility, visitor satisfaction, and environmental character, each of which may contribute to the creation of the sense of place.

Two shopping centers analyzed in this research were Kurosh and Laleh. Kurosh shopping center has a dynamic form both in its exterior and the interior. It has two atriums, but only the main atrium was chosen as the object of this research. Laleh Park shopping center has added a new dimension to Tabriz's shopping concept. This shopping center put the focus on Turkish brands such as LC Waikiki, Defacto and Mavi. In order to make the most use of the valuable land, most of the recently built shopping centers such as Laleh Park are combined with at least one tower for hotel and/or office purposes. Therefore, most of them have the majestic look of Kaya Laleh Park hotel.

Both shopping centers measure over 120,000 m<sup>2</sup>, located in Tehran and Tabriz, two of the Iranian largest cities with the highest shopping center growth rate, chosen as the research objects. They have similar spatial characteristics, so they can be categorized as shopping centers belonging to the recent decade. The Kurosh has five floors (Figure 1) and the Laleh Park has six floors, as seen in Figure 1. The concept is visible in the curved shapes of the layout, as well as in the architectural interior.



Figure 1. (a) Atrium of Laleh Park Mall; (b) atrium of Kurosh Mall

### 3. Research methodology

This study is survey research with gathered samples from a representing population. In this research, a survey was used to determine the factors of an atrium and its size (height and width) regarding respondents' views. The logic was to recognize the compact factors for public space layouts. The survey results are analyzed with CFA (confirmatory factor analysis) with AMOS software. CFA is a special form of factor analysis, most commonly used in social research.

#### 3.1. Sampling method

In this study, the sample was selected based on the probability sampling, especially the multi stage cluster sampling. Through cluster sampling, the researchers initially brought into account all the shopping malls located in Tehran and Tabriz. In the second step, the shopping malls were listed and coded by numbers. Then, the shopping malls were divided based on their location into two parts (based on city, Tehran and Tabriz). In the next step, based on cost-efficiency approach, two shopping malls were selected from the separate lists of the two cities through simple random sampling. Harris (1997) proposes that the cost (C) of conducting fieldwork in a two-stage design can be formulated as:

$$CSRS = nmc_1 + nmc_2 = nm(c_1 + c_2).$$

Where  $n$  is the number of primary sampling units (i.e. Clusters),  $c_1$  the costs associated with each primary sampling unit (e.g. Recruiting, training and supervising interviewers, and sampling);  $nm$  the total sample size; and  $c_2$  the costs associated with each single interview (sampling from interviewers' fees, travel between sites, etc). At one extreme, if all of the fieldwork was conducted at a single site/cluster, then the cost function would reduce to  $(c_1 + mc_2)$ .

The data were collected over a one-month period including four weekends during August 2016. The locations of the distribution of questionnaires, the times period of the day, and the days of the week were rotated in accordance with the recommendations of Bush and Hair (1985) to make the final sample representative of the population who shops at this particular mall as possible. Because the characteristics of the respondents in shopping malls may vary according to the day/time of the week, the data were collected on Friday, Monday, and Wednesday throughout all hours of each of the three business days (i.e., 10.00 a.m. to 9.00 p.m.). The guidelines for the respondent eligibility were established to capture individuals with different background, gender, education and age. The mall intercept approach was employed. In this method, the process involves stopping the shoppers, screening them for appropriateness, and either administering the survey on the spot or inviting them to a research facility located in the malls to complete the interview. Trained enumerators were stationed at the exit points of shopping malls. According to Cochran formula, minimum sample size necessary for the study was 384 from two cities. For minimizing total survey error, the equal number of male and female was selected. From the five largest shopping malls identified, 420 samples were collected. During the month of data collection, 900 initial contacts were made; 550 (61.1%) agreed to participate, and completed questionnaires. 420 questionnaires returned after being distributed among customers. The cleaning of the data and eliminating respondents with incomplete answers resulted in a final sample of 390 individuals visiting shopping malls.

#### 3.2. Data collection instrument

The instrument of data collection in this study was questionnaire. The questionnaire includes latent constructs (atrium legibility, atrium decoration, event decoration, social image and interaction, and event ambience) and several demographic variables (education and gender). Back translation is the most popular way for validity when questionnaires are in more than one language. Thus, the instrument translation was undertaken carefully to ensure that this process was being followed appropriately. Once the primary translation was completed, the Persian draft of the questionnaire was sent to two Iranian-English bilinguals. They examined the Persian draft by comparing it to the English version and recommended a number of revisions. Their suggestions helped to improve the second draft. After the second Persian translation was completed, the finalized Persian

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questionnaire was sent to other two bilingual experts to translate the finalized Persian questionnaire back into English. After this process, the two English versions (original versus back translated) were compared by researcher. By integrating the differences and resolving problematic items, a third Persian version of the questionnaire was prepared.

Using the analysis results on atrium settings in Laleh Park and Kurosh shopping malls, the indicators were grouped based on their loading factors. The indicators are represented in Table1 according to the values of their loading factors.

### 3.3. Validity and reliability of questionnaire

For these two shopping malls, the four atrium layout factors creating a sense of place are atrium legibility, atrium decoration, social image and interaction, and event ambience. These factors are presented in detail in Table1. The results show that the questionnaire enjoys enough convergent validity (all loading factors are more than 0.5 and AVE > 0.5) and composite reliability (CR > 0.7).

Table 1: Factors developing the sense of place of atrium in Laleh Park and Kurosh shopping malls

Factors	Indicators	Loading Factors	CR	AVE
Atrium Legibility	Atrium shape	0.74	0.783	0.524
	Visual access to all directions	0.73		
	Proportional ratio of height and width	0.67		
	Atrium size	0.60		
	Ceiling height	0.50		
Atrium Decoration	Atrium decoration	0.79	0.733	0.580
	Floor pattern	0.70		
	Interior color	0.68		
	Ceiling decoration	0.60		
	Directory	0.63		
Social Image and Interaction	Lifestyle	0.79	0.812	0.510
	Density	0.73		
	Ethnicity	0.72		
	Segmentation	0.56		
Event Ambience	Event in the atrium	0.71	0.795	0.595
	Music	0.60		
	Atrium stage	0.76		

Table 2 Discriminant validity by Fornell Lucker coefficient

Constructs	Social and Interaction	Atrium Legibility	Event Ambiance	Atrium Decoration
Social & Interaction	<b>0.714</b>			
Atrium Legibility	0.611	<b>0.724</b>		
Event Ambiance	0.544	0.531	<b>0.771</b>	
Atrium Decoration	0.619	0.527	0.730	<b>0.761</b>

Table 2 indicates that the variables of this study meet the discriminant validity because the diagonal elements in bold (i.e. square root of AVE) are greater than the off-diagonal elements at both corresponding rows and columns.

#### 4. Findings

The atrium legibility of these shopping malls (Kurosh and Laleh) is a factor affecting the sense of place. This factor includes a number of indicators, e.g. atrium shape, proportional ratio of height and width, visual access to all directions, ceiling height, and atrium size. Atrium legibility is measured as a significant factor in the atrium of Laleh Park and Kurosh Mall, recognized for its spacious ambience. Spaciousness is defined by the ceiling height, atrium shape, atrium size, and proportions of height and width.

The atrium legibility of Laleh Park mall is due to its good visibility from all directions and its medium size, which provides a friendly mood. This factor is noticeable in the medium ceiling height, since the shopping center has a 20-meter-tall atrium in oval shape. The second factor influencing the making of the sense of place is atrium decoration. This factor consists of some indicators, for example interior color, floor pattern, ceiling decoration, and atrium decoration. Social image and interaction is third factor that influences the making of the sense of place, including lifestyle, density, ethnicity, and segmentation. This factor includes the indicators of ethnicity of visitors, visitor lifestyle, density of visitors, stage and event crowd. In Laleh Park and Kurosh shopping mall, the social image and interaction are expected, since it is a fashion mall. As a result, the indicators for this aspect are visitor lifestyle, while the visitors, especially at the events, are mostly fashionable coming from the upper middle class. Therefore, the crowd at an event looks attractive, while the open design of the stage makes easy communication amongst them. Event Ambience is fourth factor creating a sense of place in the two shopping malls. This factor consists of the indicators such as background music, lighting, a well-situated directory, and use of colors. In these two shopping malls, atrium ambience, listed as the most important factor, is facilitated by LED lighting from the ceiling, availability of a directory, and use of bright colors. The following figure 2 shows the confirmatory factor analysis of research constructs and their indicators. The results of measurement model revealed that all of the fit criteria are acceptable (RMSEA=0.064, GFI=0.919, CFI= 0.933, and RMR=0.068).

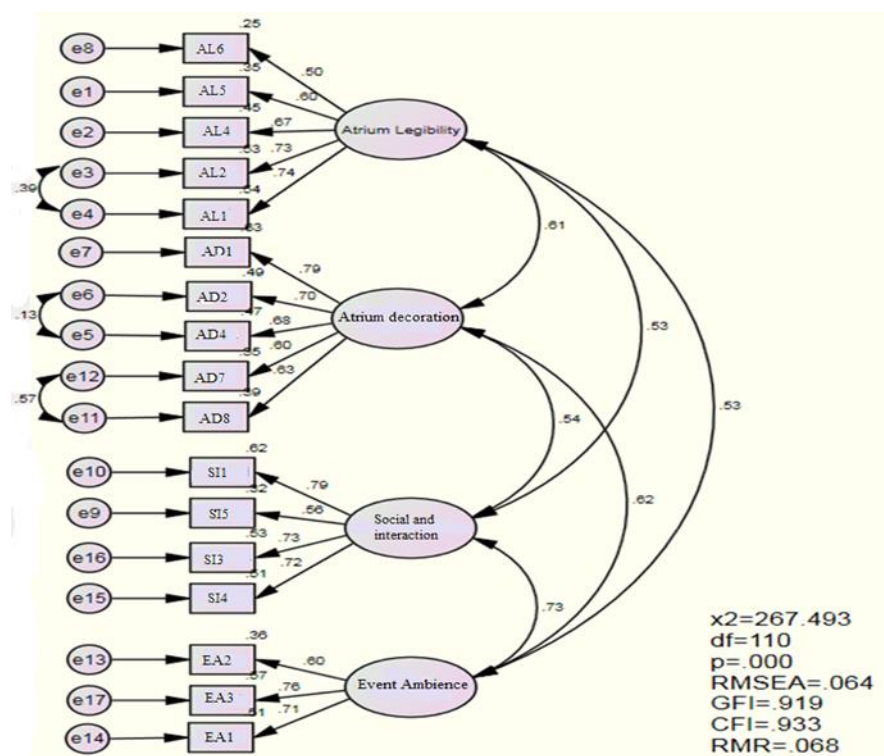


Figure 2 Result of confirmatory factor analysis (CFA)

## 5. Discussion and Conclusions

In this section, the contribution of the findings on atrium factors to theory is discussed. At first, the findings of this study support the effect of factors that form the design of an atrium. The related past studies affirm that the factors influencing a place can be defined according to their physical and social aspects (Kusumowidagdo et al. 2016). The comprehensive findings of earlier theories in the present study have provided extra insights into the description of an atrium as a place. In this shopping malls (Laleh and Kurosh Mall), social image and interaction, as well as event ambiance, are the social factors, whereas atrium decoration, atrium legibility, and event decoration are the physical factors. This observation is an apparent reason in the urban life in other shopping centers in Asia (Coclanis, 2009), which is particularly true in Iran with its increasing middle class that spends the majority of its activities indoors shopping centers Kurniawan (2012). The second factor to be considered is the atrium decoration which is a fixed decoration related with the interior design of the atrium and architecture. The fixed decoration can be in shape of typical ceiling decoration and floor decoration elements, distinguishing an atrium from others, even from the visual viewpoint of visitors. In Laleh Park shopping mall, for visitors, the decoration factors of the event space in the atrium as a public space are more significant, as shown even in ordering factors. On the contrary, the environment of the atrium for the visitors who do their activities is more important for Kurosh shopping mall visitors.

The findings of this study show that atrium legibility and social image and interaction are factors that should be present in every shopping center. These results indicate that the most important aspects perceived by interior designers, architects, management teams, and property owners are atrium decoration, atrium design, atrium legibility, and atrium social image. Other factors strengthening a sense of place are event decorations, the excitement generated by an event, and atrium ambiance. Social image and interaction are considered as the social feature of the design, including visitor lifestyle, as well as their segmentation in the shopping mall. There are some factors to be considered in accordance with the concept and geographical condition of each shopping mall, which need separate researches. This study is just a beginning to further investigations of the factors of atrium design in a shopping mall, which can then be connected to a variety of research areas. The particular framework of this research necessitates it to be carried out throughout the boom period of shopping malls growth, while the category and location of the shopping centers studied are highlighted here. Nevertheless, the given research findings are limited to the time period, sample size, and indicators to support the constructs of the variables. Therefore, the researchers of this study recommend conducting longitudinal research with a larger sample size in future studies.

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