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RESEARCH ARTICLE

Visitors' perceptions on the important factors of atrium design in shopping centers: A study of Gandaria City Mall and Ciputra World in Indonesia



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Abstract

Atriums as quasi-internal public spaces in shopping centers play an essential role as an identity provider and offer spatial orientation in shopping center architecture. This study aims to examine the significant factors of atrium design, which can provide a sense of place for shopping center visitors.

The research was conducted with the sequential exploratory method, which involved a qualitative study, followed by a quantitative study. The objects of this research were two shopping centers located in the two largest cities in Indonesia, namely, Gandaria City Mall in Jakarta and Ciputra World in Surabaya. A total of 43 informants were a part of the qualitative data collection, and 350 respondents served as survey participants. The survey research shows that the design factors considered by visitors at the Gandaria City Mall are atrium legibility, atrium decoration, event decoration, social image and interaction, and event ambience, whereas the visitors at Ciputra World considered atrium legibility, social image and interaction, atrium ambience, and atrium decoration.

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1. Introduction

The development of enclosed shopping centers or malls first began in the US in the 1950s (Carr et al., 1992; Oc and Tiesdell, 1997). At that time, the number of shopping centers offering services for transactional and leisure activities was on

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the rise in Western countries. However, in the 2000s, the development of such shopping centers slowed down in the West (Yusof et al., 2011). Comparatively, the establishment of enclosed shopping centers has rapidly grown in Asia (Erdem et al., 2004; Yusof et al., 2011). For example, retail centers in Malaysia are considered a catalyst, and the number of these retail centers continues to rise along with economic growth in the area (Yusof et al., 2011). In Thailand, enclosed shopping centers, especially those with entertainment facilities, are highly in demand, with 60% of visitors seeking for them (Jariyagudchakorn et al., 2014). In other parts of Asia, such as in Hong Kong and Singapore, the increasing number of shopping centers is mostly influenced by tourism and high-class lifestyles (Tsang et al., 2003; Coclanis, 2009). Dubai has also been regarded as the shopping capital of the Middle East because this city offers many exciting and thematic shopping centers as tourism attractions (Anwar and Sohail, 2004). The same phenomenon is observed in Indonesia, where the number of shopping centers has increased because of the modern lifestyle needs of the people in large cities and the burgeoning development of property and population.

The development of shopping centers itself cannot be separated from several factors, such as cultural shifts, technology, climate change, and physical or environmental changes (Carr et al., 1992). These factors encourage the increased use of spaces, especially public spaces, in shopping centers for various activities. However, public spaces in shopping centers are categorized as quasi-public spaces (Celik et al., 1994; Akkar, 2007; Carmona et al., 2010) that have a low degree of accessibility and openness because these are privately owned, built, managed, and controlled under high-quality, comfortable, and safe environmental conditions regardless of the environment itself (Carr et al., 1992; Akkar, 2007). Some shopping centers are also integrated with city transportation systems, so their function as nodes in urban areas increases the use value of their public spaces. Today, this change in function and the increased number of public spaces are typical phenomena in post-industrial cities, including Asian cities (Akkar, 2007).

Atriums in shopping centers are not designed as a meeting place in the broad sense, so they have a low degree of public function (Punter, 1990). However, Kazemzadeh and Azadi (2014) explain that including the atrium as a part of town space is important to establish a positive image and maximize the effect of the sense of place. In Indonesia, the increased use of atriums in shopping centers cannot be separated from their common functions. Currently, atriums serve as orientation centers and spatial identification means for shopping centers. Open plazas and atriums also function as cultural activity centers for people, both for social activities or product exhibitions. With the presence of atriums, shopping centers do not only serve as a transaction location but also as a place to socialize and represent local culture. Some atriums are even decorated in theatrical ways to attract people to visit and use them. This observation is in line with the opinions of Kazemzadeh and Azadi (2014) who state that atriums help create social value and visual communication through their role of shaping socio-cultural meaning and the sense of place.

Because of the increased use of atriums, focusing on their design aspects has become important. Atriums have certain characteristics that differentiate them from other atriums.

Although globalization has resulted in many similarities in the configurations of shopping centers and atriums around the world, Morris (1998) states that each shopping center has its distinctive characteristics, and each offers a sense of place. A "mixing and multiplying" strategy is observed with each unique local variety, such as in the types of local, national, and international stores that can be found in atriums. This strategy provides a unique and specific sense of place and vitality to each shopping center. Similarly, global modern places can have cultural backgrounds that make them stand out from their counterparts. Therefore, although atriums have similar typologies, they have unique, distinctive characteristics.

A place has specific physical and social dimensions (Najafi and Mina, 2011). Similarly, the distinctive characteristics of atriums as places appear in both their physical and social settings that strengthen both the spatial and social functions of these atriums. The successful use of an atrium as an orientation and identification center, as well as a socialization center, creates a sense of place in a shopping center.

Few studies on atriums that provide a sense of place through their architecture and interior design have been conducted even if a large number of shopping centers are found in Indonesia and Asia. Several studies have focused on atriums as a part of urban planning (Kazemzadeh and Azadi, 2014) and as an aspect of building science and safety (Gardestat, 1989). In research on shopping areas, especially with regard to their environmental behavior, studies have typically focused on the atmospheric effect of shopping centers or on their interior elements, such as lighting, music, and scent. The condition of the shopping environment is often associated with the desire for exploration and patronage, as well as buying impulse. However, studies that specifically focused on determining the relationship between the shopping environment and the sense of place, especially with regard to atriums, remain limited.

To answer the need to identify the relationship between the shopping environment and the sense of place, this study aims to determine the atrium setting factors that provide a sense of place to shopping centers. This research is significant because strategically considering the atrium setting in relation to creating a sense of place is essential for property owners, management, and designers as they develop and plan activity centers for contemporary society.

2. Theoretical background

As a public space, an atrium can be categorized as a quasi-internal public place, which means that an atrium is a public space managed by a private organization (Celik et al., 1994; Carmona et al., 2010; Gardestat, 1989). Quasi-internal public spaces are commonly found in post-industrial cities (Akkar, 2007) and in developing countries that are influenced by globalization, privatization, and commodification. Quasi-internal public spaces have lower accessibility levels than other public spaces managed by the government; however, they still serve physical, psychological, social, economic, and esthetic purposes.

Similar to other public spaces in shopping centers, atriums function to provide spatial orientation. Based on the definition of Carr et al. (1992), which was explained

previously, shopping centers function as a public place for society. In some major cities, a shopping center functions as a transportation and circulation connector. Shopping centers have become public spaces in the urban scale and are even becoming actual representatives of miniature cities.

In the discussion of urban-scale shopping centers, public spaces are a part of city architecture. Lynch (1960) states that five elements shape a city, namely, its nodes (activity centers), edges (boundaries), paths (tracks), districts, and landmarks. We can see that shopping centers have limitations in scale and in the existence of districts; however, they have edges or geographically specific land markers. These markers provide access to city circulation pathways, which may function as nodes (centers of activity) that are connected with other nodes, to reach the city; the architecture of these markers is likely to become a city landmark.

On a smaller scale, urban elements are embodied in the interior elements of shopping centers and provide the illusion of a city, so shopping centers eventually serve as an alternative to city centers (Birol, 2005, as cited in Kocaili, 2010). Birol recommends adapting the elements of a city, which are discussed in the theory of Lynch (1992), into the interior of a shopping center (Weisman, 1981; Passini, 1984, as cited in Kocaili, 2010). However, the idea of Birol cannot be directly or universally implemented in shopping centers even if public spaces, such as shopping centers, serve a similar function as public city spaces. Public spaces in shopping centers function as a direct economic commodity; they are based on ownership of private property and the difference in scale between urban and architectural development. The quality of urban elements cannot be directly compared.

However, this opinion indicates the presence of legibility in the architecture of shopping centers. Legibility is one of the factors that create spatial awareness, which plays a role in the emergence of a sense of place from the point of view of observers. In the context of this study, the atrium design of a public space in shopping centers provides legibility to a shopping center.

Private management during the planning process conceptualizes atrium design as a part of the entire architectural framework of a shopping center to actualize legibility (Gardestat, 1989). An atrium is considered a place, and a place is a combination of physical and social environments (Shamai, 1991; Najafi and Mina, 2011). Therefore, atriums as a place do not only have mathematical dimensions that can be measured and standardized, but they also reflect a special atmosphere formed from their physical environment, interior design, and social environment, which altogether create an experience. Being in an atrium provides experience to the senses and serves as a stimulus for an integrated experience (Sell et al., 1984). The shopping environment can provide a sensation to visitors because the role of the conditioned shopping environment is to enable visitor interaction, create spatial identification in their minds, and add value to shopping activities (Baker, 1986; D'Astous, 2000; Ahmad, 2012; Kusumowidagdo et al., 2013a, 2013b). The conditioning factors should be well planned to create a relationship between visitors and the shopping center or, in the context of this study, a sense of place.

When a sense of place is interpreted as a human experience that occurs in a place, both affectively and cognitively, it can

result in a variation of senses between individuals with differing backgrounds and in physical element characteristics that form a space (Najafi and Mina, 2011). The intentionality of the scale variations of the sense of place, as described by Shamai (1991), can be divided into several levels, beginning with not having a sense of place. The rest of the scale variations are belonging to a place, attachment to a place, identifying goals within a place, and sacrificing for a place. These intentionality scales can have different depths that can be attributed to the relation to a different sense of place that is specific to each visitor.

In terms of 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 order and the 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 of a location (Najafi and Mina, 2011).

In the context of a shopping center, the sense of place is the relation between a person and a place as a result of direct sensing. The internationality scale of a space, which was coined by Shamai (1991), has been developed by Kusumowidagdo et al. (2014), and this scale can be defined in various depths at different levels, ranging from the lowest level of being able to identify a shopping center to the desire to shop or spend time there. These levels may be tied to various places in the shopping center and to locations that encourage active participation. Therefore, a well-planned atrium setting aims to create a sense of place in shopping centers. The atrium area also influences the comfort of visitors (Gardestat, 1989).

Baker (1986) states that the important physical aspects of atrium design include architectural and functional esthetics. Architectural aesthetics encompass shapes, colors, scale, materials, textures, and other accessories used to define or decorate the space. Layout, signage, and comfort level are functional aspects that should also be considered. In relation to these three aspects, the tangible aspects involve not only interior features but also acoustics, which include ambient factors (Baker, 1986). Ambient factors consist of lighting, scent, cleanliness, air conditioning quality, and good acoustics for the choice of music. Good acoustics can also minimize sound transmission through the air and throughout the shopping center structure (Wee and Tong, 2007). Moreover, music can influence visitors by serving as a mediator for various age groups (Yalch and Spangenberg, 1990; Gulas and Schewe, 1994). Music-related factors are tempo (Milliman, 1986), volume (Smith and Curnow, 1966), and preference (Herrington and Capella, 1996). Lighting consists of artificial and natural lighting, but natural lighting is more commonly observed. Bright, vibrant, and dynamic lights are typically seen in Asian shopping malls (Wee and Tong, 2007). Lighting schemes provide a theatrical element to the place and can help boost sales. The lights can also provide direction for visitors, minimize visual weakness that is a result of the interior structure, and offer comfort for both visitors and



Figure 1 Exterior of Gandaria City Mall (left) and exterior of Ciputra World (right).

salespeople (Turley and Milliman, 2000). Lighting also affects customer behavior (Areni and Kim, 1994). Skylights are preferred in several locations, such as in the atrium or food court. Other ambient factors include scent and aeration. Scent has a direct influence on visitors (Mitchell et al., 1995). Signage provides clarity of direction (Wee and Tong, 2007). All these physical and ambient elements help ensure the comfort level of visitors inside a shopping center.

Marketing and promotional departments play a strong role in increasing the number of visitors in shopping centers. Attractive programs and events are held to invite as many visitors as possible and thus add to the traffic flow and visitor density. Baker (1986) explains that social factors can be derived from other customers or from personal service. The presence of other visitors can affect crowd density and speed. Density might cause stress and depression (Milgram, 1970; Saegert, 1978), but crowds during an event in a shopping center can be perceived as something positive (Bell et al., 1996). Crowds can entice other visitors to join the event. Other visitors with similar lifestyles feel comfortable and safe (Baker, 1986; Astuti and Hanan, 2011). Visitor ethnicity can also affect visitor perspective and behavior (Baker, 1986; Michon and Chebat, 2004).

Both physical and social setting elements influence visitors, parallel to the relation between humans and shopping centers, to create a sense of place. The sense of place of the shopping environment affects visitor behavior (Michon et al., 2004; Maharani, 2009; Kusumowidagdo et al., 2013a).

3. Selection of research objects

The Indonesian shopping center history is divided into three periods (Kusumowidagdo et al., 2013b). The first period is from 1960 to 1980, which is the initial era of Indonesian shopping centers. Shopping centers during this era had architectural designs of large boxes with typically low ceilings that ranged from 2.5 m to 3 m, double corridor arrangements, and no anchor tenant configuration or atriums. Shopping centers during the second period from 1980 to 1998 had a functional interior architecture with 5–10 floors, atriums, corridors with ramps, and food courts. The third period began in 1998 and lasts to this day. This period focuses on creating experience in the shopping environment. Iconic and theatrical shapes have been developed with the combination of multi-floors and outdoor

plazas. The architectural shapes and interiors of current shopping centers are typically curved.

To represent the research context, we selected two shopping centers in Surabaya and Jakarta, the two largest cities in Indonesia with the highest shopping center growth rate, as the research objects. These two shopping centers were Gandaria City Mall and Ciputra World. Both shopping centers measure over 100,000 m² (Levy and Weitz, 2000). They have similar spatial characteristics, so they can be categorized as shopping centers belonging to the third period, which is 1998 to the present day (Kusumowidagdo et al., 2013b).

Gandaria City Mall and Ciputra World are parts of the superblock complex located in Jakarta and Surabaya. Gandaria City Mall is located in South Jakarta, and Ciputra World is located in the center of Surabaya.

Gandaria City Mall has a dynamic form both in its exterior and interior. It has four atriums, but only the main atrium was chosen as the object of this research. The height of the main atrium of Gandaria City Mall is 33 m, and the total dimension of the atrium is 1916 m². The main atrium has five floors, as shown in the left image in Figure 2.

Ciputra World features a nautical-based thematic concept in accordance with the image of Surabaya as a maritime city. This feature can be observed in the right image in Figure 1 and in the right image in Figure 2. The concept is visible in the curved shapes of the layout, as well as in the architectural interior with waves in 2D and 3D forms. Ciputra World has three atriums, but only the main atrium was chosen as the object of this research. The width of the main atrium is 1067 m², and its height is 23 m. The third-void floor main atrium has a hollow yet familiar impression.

4. Overall study

This research used the sequential exploratory method and was divided into two stages of sub-research.

4.1. Study 1

The sense of place in the interior was not thoroughly investigated in this study, especially in conditions such as those found in Indonesia. Factual evidence obtained from observations and various media reports indicate that in general, people strongly welcome the establishment of shopping centers. Therefore, this information became the



Figure 2 Atrium of Gandaria City Mall (left) and atrium of Ciputra World (right).

grounding theory in selecting informants, who were shopping center visitors. By using this method, the research developed a theory from a process, action, or interaction formed from the perspective of the participants (Strauss and Corbin, 1998, as cited in Cresswell, 2007). The text of the interview process was analyzed with content analysis, and it was further studied in the second part of the research.

4.2. Study 2

The second study involved a survey research that gathered samples from a segment of the population representing the overall population (Singarimbun as cited in Masri and Singarimbun, 1989). In this research, a survey was used to determine the compact factors of an atrium and its proportions (height and width) by obtaining respondents' views. The purpose was to identify the compact factors for public space layouts. The survey result was analyzed with factor analysis. Factor analysis is a statistical multi-variant technique used to test the relationship of interdependent variables (Hair et al., 2007). The questionnaires used in this study were validated and tested for reliability. The total number of items for the respondent questionnaires met the requirement of 10 out of 17 questionnaires. A total of 175 respondents participated in the survey (Hair et al., 2007).

5. Findings of study 1: identification of the factors of atrium design

In the atrium area, a comfortable layout can be determined by many indicators, including visibility, atrium shape, ceiling height, atrium size, room proportion, ceiling ornaments, floor ornaments, background music, lighting, atrium decoration, directory, stage, event crowd, density, visitor life-style, and visitor ethnicity or segmentation. These indicators of atrium design are explained in detail below.

(1) Visibility or visual access to all directions

Visibility is an important factor because the atrium serves as a space that provides orientation for the shopping center. Easy visual access to all directions means clear visibility of stores and the circulation corridor. In the focus group discussion, one of the informants stated that good visibility means no visual obstacles are present, both in the form of architectural or decorative elements, which might block the view to the atrium for tenants standing in the corridor area or in the plaza during an event.

I think the atrium is quite large, and the view is also very good. I once attended a Hi-5 event held in the atrium. I noticed that the atrium was visible from all floors. Therefore, the visibility of the atrium is excellent.

(2) Atrium shape

The shape of an atrium is also a factor that contributes to the sense of place. The more unique the shape, the better it can set the shopping center apart from other shopping centers, and the better is the formation of the sense of place. In the 1998 onwards era of Indonesian shopping centers, the majority of shopping centers have been observed to use both curves and straight lines. Curves and ovals dominate the shape of atriums rather than squares and rectangles. For shopping centers with more than one atrium, curves and rectangular shapes are combined in the layout.

The curves, proportion, shape of the ceiling, visibility, and decoration are all good. Visibility means the ability to see toward all directions, including far distances.

(3) Ceiling height

The ceiling height influences the appearance of an atrium by making it look grand and not too congested. However, an atrium with a ceiling that is too high will create an over-the-top, formal look.

The ceiling is high, so the shopping center appears large. Fun events, such as exhibitions and sales promotions, are held here.

(4) Atrium size

The breadth of an atrium affects its comfort level as a public space, especially one that accommodates various activities and events that cater to a large number of people. In addition to functionality and the capability to accommodate a certain number of people, the size of an atrium is important to make visitors feel the ambience of the place.

The atrium is huge and makes the mall appear large and interesting. The different shapes of the atrium make it look dynamic and interesting. Viewing other levels while standing at the atrium also feels comfortable.

(5) Proportional ratio of height and width

The proportions of an atrium, which are its height and width in this study, influence the comfort level of people standing in a room with a very tall void. The adequate proportions of a space were mentioned by one respondent.

The height of the atrium is okay. Because of its size, they can play around with the designs. Room proportion has a great influence here. Proportion provides good visibility of the surroundings and prevents them from looking bare.

(6) Ceiling decoration

Decorations on the ceiling provide an identity to the atrium and can differentiate one shopping center from another.

Ceilings and floors need to be inviting because an atrium is often used for exhibitions. Therefore, using raised floors with timber or carpet as materials for flooring is preferable. Ceilings need to be unique to easily determine where the exhibition is held.

(7) Floor pattern

Floor ornaments also play an important role in creating a positive visual appearance. The use of patterns is an element to consider in both shopping centers and atriums.

The floor material is differentiated by the use of parquet floor. I used to think that the floor was made of onyx or marble.

(8) Interior colors

Color scheme is an important consideration in atrium design. Neutral colors are normally used on interior surfaces, floors, ceilings, and columns. The informants stated that bright colors offer a spacious feel.

Interesting colors can be observed on the columns and floors in the atrium. When events are held in the atrium, the colors used in the events definitely become the dominating ones and help form the theme of the place.

(9) Music

Music in an atrium is important because it sets the tone of the space. Music may attract visitors to gather in an area or just relax there. Music as a part of an event provides an

overall auditory experience in all parts of the shopping center because the void in an atrium causes sound to reverberate in various directions.

Music inside the atrium, especially during an event, usually supports the ambience and attracts attention. The voice of the emcee or any other information announced over the microphone also has the same effect. When live music is playing or a musical show is held, the ambience changes accordingly.

(10) Directory

Displaying a shopping directory within the atrium area, which functions as an orientation space, is important. Effective directory management considers the location of the directory and the directory type. An easy-to-access location with clear visual availability is the right place to display a directory.

In this shopping center, the location of the directory, including both directional sign boards and electronic ones, is well considered. A functional directory makes looking for information easier; it saves time and energy because shopping center visitors do not need to go around many times to find a particular item. The stores are numerous, and they are quite inclusive, so a good directory makes finding what the shoppers want easier. Meeting friends and going shopping can also be done faster.

(11) Atrium decoration

Atrium decoration is a free-type décor displayed according to the event or theme. The decoration might be large in size and might complement the theme of the event being held. Decorations can also be placed in the void or near the event stage.

The decoration of the atrium seems interesting; the décor is also usually done in a special way during special events. Additional decorative ornaments are placed both in the atrium and along the corridor.

(12) Atrium stage

The most significant factors to consider in an atrium stage are the shape of the decorations and the layout of the event. A stage is usually constructed for routine events, as well as temporary ones, which vary according to the monthly theme. For the standard design, the height and breadth of the stage should be appropriate for the types of events held and should meet visual criteria, so that visual contact with the tenants is not blocked.

The position of the stage is important to allow all people to get a good view. Ambience and music also play an important role. Audible sounds and a good stage position will attract people to look at the stage, so the stage visibility should be good. If the event is packed, shopping center visitors will surely want to take a look; if the position of the stage is good, more people will watch. Position and the crowd are then two important points in this aspect.

(13) Density

Density affects the desire of other visitors to join the activities in a shopping center. When an event is jam-packed,

other people perceive it as interesting, so they will most likely want to check it out as well. The need for personal space can decrease as a result of the crowd and the density of space during an event. Therefore, visitor perception of density is based on the background, the physical gap between people, and the need for public space.

Exhibitions and bazaar sales are typically held in the atrium area, which is crowded. The crowd makes the experience of going to this area enjoyable. People mingle together, and this does not bother me. These things are interesting to see in the shopping center. In summary, the building is attractive, and many activities are held in the atrium.

(14) Events in the atrium

The events held in an atrium are one of the main attractions of a shopping center. These events are linked to various other factors, including stage design management and event booths. People usually await and expect unique events. The events held will determine the number of visitors involved, where they come from, and the mass media members who will attend to review the events.

Events motivate or draw people to see them. These events are usually flocked by people who want to show off their lifestyle.

The atrium is large enough for events. The stage and interesting exhibitions are commonly placed there. The area allows for a good orientation. Next to the main atrium is the seating area for visitors who are waiting.

(15) Lifestyle

Visitor lifestyle includes the fashion styles and activities of visitors. The fashion style can be casual, elegant, and professional.

People visiting this place are not the run-of-the-mill kind. At least, I feel safe in Ciputra World because I do not see many people who are slightly "off."

Visitors generally dress well. I think this reflects their modern lifestyle. Dressing well is not only "stylish," but it is a part of these people's lives.

(16) Ethnicity and segmentation

The ethnicity and segmentation of visitors facilitate safety, especially in connection with personal distance. Preference toward the same segmentation is completed by imaging, and the selection of appropriate media is a component of shopping center marketing efforts. Visitors believe that grouping according to ethnicity and segmentation provide feelings of comfort and safety.

The event visitors look pleasing to the eyes, so we do not feel uneasy when joining the event. They appear to have a certain style. Similar segmentation influences this feeling.

(17) Lighting design

Lighting is another factor to consider in atrium design. Lighting includes natural and man-made light. Natural light comes from skylights, whereas artificial lighting illuminates the entire atrium and stage.

The interesting things in this shopping center are the size of the atrium and the lighting, both natural and artificial. Skylight is often used in the atrium, which gives the atrium a vibrant look.

Among the 17 indicators, those that involved new findings are visibility or visual access to all directions, stage design, and event crowd at the atrium. The results on the indicators of atrium shape, height of the ceiling, size of the atrium, ceiling decoration, proportion, floor pattern, and color interior agree with the conclusions of Baker (1986) and Steele (1981) on the design factors related to the aesthetic aspect of a shopping environment. Two indicators are related to ambiance, and these are lighting design and music. The results on lighting design echo the findings of Turley and Milliman (2000), and those on music confirm the findings of Baker (1986) and Wee and Tong (2005). Baker (1986) states that ambiance is a background condition that exists below the level of our immediate awareness. The results on the indicators of social setting, such as density, lifestyle, ethnicity, and segmentation, agree with the conclusions of Baker (1986), Michon and Chebat (2004), Astuti and Hanan (2011), and Bell et al. (1980). Furthermore, the findings on the signage indicator also agree with those of Wee and Tong (2007) and Baker (1986). One indicator that was not discussed in this research is scent as an indicator of the sense of place because it has not yet been used in the researched shopping centers. However, a previous study (Mitchell et al., 1995) indicates that scent strongly affects visitors' behavior.

6. Study 2

6.1. Sample and survey format

In the second study, primary data were obtained from the survey conducted among 175 visitors of the two shopping centers. Therefore, the total respondents for this study were 350 individuals. Questionnaires were distributed to the visitors with the aim of grouping the 17 elements of an atrium as the indicators of the sense of place in a shopping center. Closed-type questions were used in the questionnaires, and the answers were provided on a five-point Likert scale.

6.2. Instrument

The indicator items were developed from the results of the qualitative research during the first stage of the study. A total of 17 indicator items were constructed. Initially, 30 questionnaires were administered after the use of the pre-test instrument. Accordingly, the researcher determined that the instrument in the questionnaires was valid and reliable.

6.3. Findings of study 2: atrium factors that create a sense of place

Based on the analysis results on atrium settings in Gandaria City Mall and Ciputra World, the indicators were grouped according to their loading factors. Their *eigenvalues*, which

Table 1 Factors that develop a sense of place in the atrium of Gandaria City Mall, Jakarta, Indonesia. Source: results of factor analysis.

Factors	<i>Eigenvalue</i>	Indicators	Loading factors
Atrium legibility	3.734	Visual access to all directions	0.790
		Atrium shape	0.758
		Ceiling height	0.721
		Atrium size	0.705
		Proportional ratio of height and width	0.693
		Directory	0.668
		Interior color	0.596
Atrium decoration	1.936	Floor pattern	0.787
		Ceiling decoration	0.721
		Atrium Decoration	0.657
Event decoration	1.295	Atrium stage	0.659
		Lighting	0.612
Social image and interaction	1.229	Density	0.793
		Lifestyle	0.684
		Ethnicity and segmentation	0.577
Event ambience	1.170	Music	0.719
		Event in the atrium	0.667

can be seen in [Tables 1](#) and [2](#), determine the number of the groups of factors (composing a good atrium design) present. The value indicates how high or low the level of a factor is in the perception of visitors.

Each factor mentioned is influenced by its indicators. The indicators are represented in consecutive order according to the values of their loading factors. These loading factors, as shown in [Tables 1](#) and [2](#), mark the order of the factors starting from the need of information factor. The most important factor has the highest value, so the order of the loading factor values determines the level of importance of the factors with regard to the indicators of a good atrium design, as perceived by the visitors. As a result, a specific factor is created.

For Gandaria City Mall, the five atrium layout factors that create a sense of place are atrium legibility, atrium decoration, event decoration, social image and interaction, and event ambience. These factors are presented in detail in [Table 1](#).

The first factor that influences the creation of a sense of place is atrium legibility, with an *eigenvalue* of 3.734. This factor comprises several indicators, such as visibility from all directions, atrium shape, ceiling height, atrium size, exact proportion of height and width, clear directory, and use of colors in the interior. Atrium legibility is considered an important factor in the atrium of Gandaria City Mall, which is known for its spacious ambience and easy orientation. Spaciousness can be indicated by the atrium shape, ceiling height, atrium size, and proportions of height and width. Easy orientation can be indicated by visibility from all directions and a well-situated directory.

The second factor that influences the creation of a sense of place is atrium decoration, with an *eigenvalue* of 1.936. This factor consists of several indicators, such as floor pattern, ceiling ornaments, and atrium decoration.

Event space decoration, with an *eigenvalue* of 1.295, is the third factor that influences the creation of a sense of place. This factor has two indicators, namely, stage and lighting. The

atrium decoration factor provides an identity to the atrium, and the indicators that influence the creation of a sense of place include onyx floor ornaments with curved patterns, ceiling ornaments with fin-like patterns, and atrium decoration that can be found in nature. These three indicators provide a place identity to create a sense of place.

The fourth factor that influences the creation of a sense of place is social image and interaction, which has the indicators of visitor density, visitor lifestyle, and ethnicity and segmentation of visitors. Visitor density attracts more people to be a part of the space (4 persons/m²), whereas visitor lifestyle and similar visitor segmentation in the event area prompt people to interact at a close distance.

Event ambience is the fifth factor, with an *eigenvalue* of 1.170. The indicators that influence the creation of a sense of place are the background music in the atrium and the crowd during an event. The stars of the event and the event ambience are considered in the creation of a sense of place. This factor is basic in the planning of various events by management. Event space decorations and event ambience are important because the size of the void space reaches 81,585 m².

Next, based on the analysis results on atrium location in Ciputra World, the indicators can be grouped into factors according to their loading values. The full results are found in [Table 2](#). Four factors influence the creation of a sense of place in an atrium.

The first factor that influences the creation of a sense of place is atrium legibility, which consists of the indicators of visibility from all directions, height of the ceiling, atrium shape, atrium breadth, and exact proportions of height and width. Atrium legibility can also be perceived as the uniqueness of the atrium. The atrium legibility of Ciputra World is due to its good visibility from all directions and its medium size, which creates a friendly atmosphere. This factor is evident in the medium ceiling height because the shopping center has a 23-meter-tall atrium that is of oval shape and measures 533.8 m².

Table 2 Factors that develop the sense of place of atrium in Ciputra World, Surabaya Indonesia.
Source: The result of factor analysis.

Factors	Eigenvalue	Indicators	Loading Factors
Atrium Legibility	2.996	Visual access in all direction	0.791
		Ceiling height	0.764
		Atrium shape	0.704
		Atrium size	0.681
		Proportional ratio of height and width	0.586
Social image and interaction	2.780	Lifestyle	0.846
		Ethnicity and segmentation	0.800
		Density	0.669
		Event in Atrium	0.628
		Atrium stage	0.587
Atrium Ambience	2.556	Music	0.790
		Lighting	0.689
		Directory	0.620
		Interior color	0.536
Atrium Decoration	2.246	Ceiling decoration	0.814
		Floor pattern	0.765
		Atrium Decoration	0.625

The second factor is social image and interaction, which consists of the indicators of visitor lifestyle, ethnicity or segmentation of visitors, density of visitors, and event crowd and the stage. The social image and interaction at Ciputra World are expected because it is a fashion mall and a trend hub, as planned by its management. Therefore, the indicators for this factor are visitor lifestyle, with people's appearance and clothing following the current trend and with the visitors mainly coming from the upper middle class, and visitor density, which is usually high during events. The crowd at an event is also inviting, and the open design of the stage facilitates interaction among people.

The atrium ambience factor, with an *eigenvalue* of 2.556, has the following indicators: background music in the atrium, lighting, a well-situated directory, and use of colors. In Ciputra World, atrium ambience, which is listed as the third most important factor, is facilitated by the background music in the atrium, LED lighting from the side corridor and ceiling, availability of a directory, and use of bright colors.

The atrium decoration factor, with an *eigenvalue* of 2.246, comprises several indicators that influence the atrium, namely, ceiling ornaments, floor ornaments, and atrium decoration. The atrium decoration provides an identity for the atrium and might appear in the form of ceiling ornaments that follow the curvaceous maritime theme of the shopping center, floor ornaments, or atrium decorations. The decorations can be found in nature and usually draw attention during events.

7. Discussion

This section discusses the contribution of the findings on atrium factors to theory and compares the results on the two research objects. First, the findings support the theory of factors that shape the design of an atrium. Earlier related theories state that the factors affecting a place can be

defined according to their physical and social aspects (Shamai, 1998; Najafi and Mina, 2011). The extended findings of previous theories in the present study have provided additional insights into the definition of an atrium as a place. In the case of Gandaria City Mall, atrium legibility, atrium decoration, and event decoration are the physical factors, whereas social image and interaction, as well as event ambience, are the social factors. Similarly, in Ciputra World, atrium legibility, atrium ambience, and atrium decoration are the physical factors, whereas social image and interaction factors are the social factors.

Second, similarities and differences are found between the two research objects and between the two factors among the study objects. These similarities indicate that basic parameters were used to plan the shopping centers because of the similar typologies of the elements of the shopping center spaces. The differences indicate that each shopping center has its own spatial and social uniqueness that defines its identity and that is considered by its visitors.

For both shopping centers, their similar factors are atrium legibility, social image and interaction, and decoration. Atrium legibility, or the distinctive characteristic of an atrium, is a physical factor in both of the shopping centers. Atrium legibility can be defined as a distinctive characteristic of an atrium from the aspect of its architecture and interior design. The atrium legibility of Gandaria City Mall is based on the creation of broad and easily oriented images, whereas the atrium legibility of Ciputra World is based on familiar impression and good visibility. The legibility of a place can influence the sense of spatial awareness of a place (Lynch, 1960; Kaplan as cited in Bell et al., 1996). Social image and interaction as social factors create an atmosphere of the social urban life of the upper middle class. This observation is evident in the urban life in other shopping centers in Asia (Tsang et al., 2003; Coclanis, 2009), especially in Indonesia with its expanding middle class that spends most of its activities inside shopping centers (Kurniawan, 2012). The atrium decoration to be

considered is the fixed decoration associated with the architecture and interior design of the atrium. The fixed decoration can be in the form of ceiling decoration and floor decoration elements, which are distinctive and serve to differentiate an atrium from others from the visual perspective of visitors.

The differences indicate that each shopping center has its own spatial and social uniqueness that defines its identity and that is considered by visitors. The review of shopping centers cannot be separated from the purpose of these shopping centers as set by their respective managements (Wee and Tong, 2005) and the characteristics of these two shopping centers as geographically different places (Abaza, 2001).

Gandaria City Mall emphasizes more on the setting of a shopping center primed as an event center for visitors. By contrast, Ciputra World highlights the intended setting of a shopping center as a trendy fashion mall, as evident in its architectural shapes and interior. The decoration factors of the event space and the event crowd in the atrium as a public space are more important for Gandaria City Mall visitors, as shown in the order of the factors. On the contrary, the atmosphere of the atrium for visitors who do their activities there is more important for Ciputra World visitors.

The geographical conditions of these shopping centers also affect the selected theme. In Jakarta, with its plural society, the theme is modern and is implemented in the atrium design. In Surabaya, the thematic design is oriented with regard to the strong image of Surabaya as a coastal city, as shown and inspired by the wave-like curves in the atrium.

The novelty of this research is in its detailed findings on the factors perceived by visitors in the context of a shopping center, in addition to the grounding of the study on the theory that a shopping center is influenced by its physical and social factors. The factors found in both shopping centers have similarities in terms of place legibility, social factor, and social interaction. The remaining factors are distinct to the design of each shopping center, and this design is also influenced by the concept of the shopping center, as well as its social and geographical conditions.

8. Conclusions

The conclusions of this research are as follows:

1. The factors that should be present in every shopping center are atrium legibility and social image and interaction. Atrium legibility represents the spatial characteristics of a shopping center. Social image and interaction are focused on the social aspect of the design, such as visitor density and visitor lifestyle, as well as their ethnicity and segmentation in the shopping center. As for atrium decoration, the decorations attached to interior elements can be in the form of ornaments found in the ceilings and floor patterns.
2. In addition to the two points mentioned above, other factors also need to be considered in accordance with the concept and geographical condition of each shopping center. These additional factors are event ambience, event decoration, and atrium ambience. Event ambience can be defined as the moments or situations that can

attract visitors, such as the crowd and certain events. Event decoration, such as exhibition room decoration and stage decoration, is an element of thematic decoration with free characteristics, which means that these features can only be observed during certain events. Atrium ambience is evident in the basic condition of an atrium, music, air conditioning, and lighting.

9. Design implications and future research

The most important aspects perceived by architects, interior designers, management teams, and property owners regarding atrium design are atrium legibility, atrium decoration, and atrium social image and interaction. Other factors that can strengthen the creation of a sense of place are event decorations, the excitement generated by an event, and atrium ambience. These aspects can be strategically analyzed and integrated into a master plan for the construction of atriums in shopping centers.

This research provides the basis to further explore the factors of atrium design in a shopping center, which can then be linked to various topics. The special context of this study is that it is conducted during a period when the development of shopping centers is in boom, and the research also considers the category of the shopping centers studied, the respondents' age, and the research location area in the atrium. Future researchers can focus on other categories of shopping centers, respondents from different age groups, public spaces other than atriums, and shopping center locations in different countries. With a different focus, future studies can identify new factors that will enrich basic knowledge on the design of retail centers.

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