

AN ANALYTICAL EVALUATION OF INTERIOR FURNITURE ELEMENTS IN SHOPPING MALLS IN RELATION TO THE SPATIAL PERCEPTION AND USER EXPERIENCE OF FAMILIES WITH CHILDREN: THE CASE OF PANORA AND KENTPARK SHOPPING MALLS

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Abstract

This study examines the relationship between interior urban furniture elements and the shopping mall preferences of families with children. As interior public spaces, shopping malls incorporate lighting, seating units, and floor coverings as key design components influencing spatial perception, wayfinding, safety, and user comfort. Panora Shopping Mall and Kentpark Shopping Mall, both located in Ankara, were selected as case studies due to their distinct spatial typologies and circulation systems. The research adopts an exploratory mixed-method approach, combining a literature review with structured face-to-face interviews conducted with 20 families who actively use these malls. The data was analyzed through descriptive evaluation to identify patterns related to user interaction and spatial perception. Findings reveal that balanced lighting enhances spatial legibility and perceived safety, while the ergonomic design and placement of seating units directly affect duration of stay and user satisfaction. Floor coverings were found to support child safety; however, their contribution to spatial orientation remained limited. Overall, interior urban furniture elements play not only functional but also perceptual and experiential roles, significantly influencing spatial preferences and user experience, particularly for families with children.

Keywords: Public spaces, shopping malls, urban furniture, spatial perception, user preferences

ALIŞVERİŞ MERKEZLERİNDE İÇ MEKÂN DONATI ELEMANLARININ ÇOCUKLU AİLELERİN MEKÂNSAL ALGI VE KULLANICI DENEYİMİ İLE İLİŞKİSİ BAĞLAMINDA ANALİTİK DEĞERLENDİRİLMESİ: PANORA VE KENTPARK ALIŞVERİŞ MERKEZLERİ ÖRNEĞİ

Özet

Bu çalışma, iç mekân kent donatı elemanları ile çocuklu ailelerin alışveriş merkezi tercihleri arasındaki ilişkiyi incelemektedir. Kamusal iç mekânlar olarak alışveriş merkezlerinde kullanılan aydınlatma, oturma birimleri ve yer döşemeleri; mekânsal algı, yön bulma, güvenlik ve kullanıcı konforunu etkileyen temel tasarım bileşenleri olarak ele alınmıştır. Panora Alışveriş Merkezi ve Kentpark Alışveriş Merkezi, farklı mekânsal tipolojileri ve dolaşım sistemleri nedeniyle örnek alanlar olarak seçilmiştir. Araştırma, literatür taraması ile bu alışveriş merkezlerini aktif olarak kullanan 20 çocuklu aileyle gerçekleştirilen yapılandırılmış yüz yüze görüşmeleri birleştiren keşifsel bir karma yöntem yaklaşımına dayanmaktadır. Veriler, kullanıcı etkileşimi ve mekânsal algıya ilişkin örüntüleri belirlemek amacıyla betimleyici olarak analiz edilmiştir. Bulgular, dengeli aydınlatmanın mekânsal okunabilirliği ve güvenlik algısını artırdığını; oturma birimlerinin ergonomik özellikleri ile konumlandırılmasının mekânda geçirilen süre ve kullanıcı memnuniyeti üzerinde doğrudan etkili olduğunu göstermektedir. Yer döşemeleri çocuk güvenliğini desteklemekle birlikte yön bulmaya katkılarının sınırlı olduğu belirlenmiştir. Sonuç olarak, iç mekân kent donatı elemanlarının yalnızca işlevsel değil, aynı zamanda algısal ve deneyimsel roller üstlendiği; özellikle çocuklu ailelerin mekânsal tercihleri ve kullanıcı deneyimi üzerinde belirleyici olduğu ortaya konmuştur.

Anahtar sözcükler: Kamusal mekânlar, alışveriş merkezleri, kent donatıları, mekânsal algı, kullanıcı tercihleri

1. Introduction

Shopping malls have become one of the most important contemporary interior public spaces, serving not only as commercial environments but also as social, recreational, and experiential settings. Unlike traditional retail environments, shopping malls provide controlled, comfortable, and multifunctional interior spaces where users spend extended periods of time engaging in various activities beyond shopping, such as resting, socializing, and leisure (Erkip, 2005; Crawford, 1992). In recent decades, shopping malls have increasingly functioned as hybrid public environments that combine commercial, social, and experiential functions, making interior spatial quality and user experience critical components of their success (Carmona, 2019; Rosenbaum et al., 2017).

Along with this transformation, the amount of time spent in interior public environments has increased significantly, leading users to place greater emphasis on comfort, accessibility, and spatial quality. Interior environmental characteristics, including furniture elements, lighting, materials, and spatial configuration, directly influence users' perceptions, behaviors, and overall experience in shopping mall environments (Bitner, 1992; Zhang et al., 2024). In this context, interior furniture elements such as seating units, lighting elements, and floor coverings play a critical role in shaping spatial perception, supporting user needs, and enhancing spatial usability. Furniture elements are important spatial components that contribute to both functional and perceptual aspects of interior environments. These elements help organize spatial structure, guide user movement, and create opportunities for rest and interaction. When furniture elements are designed and positioned in harmony with spatial organization, they contribute to the formation of a coherent spatial identity and improve the legibility and usability of interior environments (Gehl, 2011; Lynch, 1960). In shopping malls,

the spatial arrangement, accessibility, and design quality of furniture elements significantly influence user comfort, duration of stay, and overall satisfaction with the environment (Dep & Mitra, 2020).

Shopping malls can also be considered contemporary interpretations of public space. Traditionally, public spaces such as streets, squares, and parks have served as environments for social interaction and collective experience (Madanipour, 2003). However, with the increasing importance of indoor environments, shopping malls have assumed similar social functions within controlled interior settings. These environments provide opportunities for social interaction, recreation, and passive engagement, particularly for specific user groups such as families with children, who require safe, comfortable, and accessible interior environments (Carmona, 2019; Zhang et al., 2024). Spatial identity and spatial perception are closely related to the physical characteristics of interior environments. Elements such as lighting, seating, and floor materials influence how users perceive, understand, and interact with space. The visual, tactile, and functional qualities of these elements contribute to the formation of spatial identity and affect users' environmental experience (Pallasmaa, 2005; Lynch, 1960). Recent studies emphasize that interior design elements, including seating availability, lighting quality, and flooring materials, play a key role in shaping spatial perception, orientation, and user-environment interaction in shopping mall interiors (Zhang et al., 2024). Despite the growing importance of shopping malls as interior public environments, studies examining the interaction between users and interior furniture elements remain limited, particularly in the context of specific user groups such as families with children. While previous research has focused primarily on commercial performance, consumer behavior, and architectural design, fewer studies have examined how interior

furniture elements contribute to spatial perception, spatial identity, and user experience within shopping mall environments. Understanding this interaction is essential for improving interior spatial quality and enhancing user-centered design in contemporary shopping malls (Carmona, 2019).

This study examines the interaction between users and interior furniture elements in shopping mall environments, with a particular focus on families with children. Specifically, the study investigates seating elements, lighting elements, and floor coverings, and evaluates their role in spatial perception, spatial organization, and user experience. Panora and Kentpark Shopping Malls were selected as the case study areas due to their spatial diversity, distinct architectural focal points, and continuous circulation systems. Accordingly, the aim of this study is to investigate the role of lighting elements, seating elements, and floor coverings in shopping mall interior design in terms of use, spatial configuration, and user interaction, and to reveal how these elements influence spatial perception and user experience. In this context, the main research question is defined as follows:

RQ1. How do users interact with interior furniture elements and products—specifically lighting elements, seating elements, and floor coverings—in Panora and Kentpark Shopping Malls?

To address this primary question in greater depth, the study is guided by the following sub-questions:

RQ2. How are furniture elements and products positioned within the circulation systems of shopping malls?

RQ3. What characteristics should furniture elements in shopping malls possess in relation to user expectations?

RQ4. What role do furniture elements play in shaping user experience in shopping mall interior design?

RQ5. Do furniture elements contribute to the formation of spatial identity in shopping malls?

RQ6. How is users' spatial perception of shopping malls shaped?

1.1. The Concept of Public Space

The concept of public space is defined in various ways. Madanipour (2003) describes public space through four different dimensions. Accordingly, public space can be defined as: (1) a physical space for human communication and interaction, (2) a non-physical, metaphorical space formed by human actions, (3) a space in which different forms of information exchange between parties take place, and (4) an area where relational articulation and intellectual or non-intellectual debates occur (Karadağ, 2003). On the other hand, the concept of public space was first introduced by Habermas (1994). According to Habermas, public space is a shared social arena in which ideas, discourses, and actions aimed at determining and realizing the common good are produced and developed (Tekel, 2009). In this context, public spaces are places where individuals from different social groups can share experiences and engage in active or passive interaction.

Public spaces may exhibit different qualities in terms of their shared characteristics, patterns of use, and the values they represent. Concepts such as accessibility, equality, aesthetics, and functionality are fundamental qualities of public spaces (Uzun, 2006). Contemporary public space theory further emphasizes inclusivity, spatial justice, and social sustainability as important dimensions shaping user experience and spatial performance (Carmona, 2019; UN-Habitat, 2020; Mehta, 2018). In contemporary cities, functions such as gathering, resting, and recreation have become increasingly important, highlighting the experiential and perceptual dimensions of public space.

Historically, parks, squares, and streets constituted the primary forms of public space. However, increasing urban density, changing lifestyles, and environmental control needs have led to the growing importance of interior public environments. Users increasingly prefer indoor public spaces due to comfort, safety, and climatic protection. In this context, shopping malls have emerged as one of the most prominent contemporary indoor public environments, providing controlled spatial conditions that support social interaction, recreation, and user experience (Carmona, 2019; Mehta, 2018). As a result, the concept and spatial expression of public spaces continue to evolve in response to changing social, environmental, and spatial conditions.

1.2. Shopping Malls and the Public Space Qualities of Shopping Malls

The relationship between public space and shopping malls represents a critical transition in understanding the transformation of contemporary urban life (Madanipour, 1996; Zukin, 1995). Traditional public spaces such as streets, squares, and parks have historically functioned as environments supporting social interaction and collective experience. However, shopping malls reproduce many of these functions within controlled, privatized, and indoor environments (Crawford, 1992; Zukin, 1998). Due to advantages such as safety, climatic protection, and environmental comfort, shopping malls have become attractive environments for social interaction and everyday activities. However, this transformation has also generated debates regarding accessibility, inclusivity, and spatial control (Sennett, 1992). Therefore, shopping malls should be understood not as direct replacements for public spaces but as transformed and reinterpreted forms of public space within contemporary urban environments (Madanipour, 2003).

Shopping malls emerged as products of changing consumption patterns and urban development processes. Over time, they

evolved from purely commercial environments into multifunctional spaces supporting social, recreational, and experiential activities (Ritzer, 2005; Bloch et al., 2018; Rosenbaum et al., 2017). In contemporary cities, shopping malls function as hybrid socio-spatial environments where consumption, leisure, and social interaction coexist, significantly influencing spatial behavior, environmental perception, and user experience (Stillerman & Salcedo, 2012; Gilboa et al., 2015; Mehta & Bosson, 2018).

The emergence of modern shopping malls can be traced to Victor Gruen's vision of creating integrated urban environments (Crawford, 2002). In Turkey, shopping malls began to develop in the late 1980s as part of broader socio-economic transformation processes (Öncü & Weyland, 1997; Erkip, 2005). Designed to resemble public spaces, shopping malls provide controlled environments that include social, recreational, and entertainment functions. However, despite their public-like functions, shopping malls operate under private ownership and controlled access, which differentiates them from traditional public spaces in terms of spatial freedom and social inclusivity (Low, 2000; Carmona, 2019; Mehta, 2014). As inward-oriented and controlled environments, shopping malls represent a contemporary form of indoor public space where spatial design and environmental characteristics directly influence user perception and spatial experience (Rosenbaum et al., 2017).

1.3. Spatial Identity in Shopping Malls and Influencing Factors

Environmental image formation is influenced by individuals' perceptual processes, experiences, and interactions with spatial environments (Gökçe, 2007). Spatial identity represents a fundamental component in understanding how users perceive and interpret environments. It refers to the process through which individuals recognize, interpret, and assign meaning to spatial environments based on their physical characteristics and experiential

qualities (Gökçe, 2007). The ability of a space to be distinguishable and recognizable plays a key role in shaping spatial identity. Interior spatial configurations such as atriums, circulation areas, and gathering spaces significantly influence spatial perception and identity formation. According to Lynch (1960), elements such as paths, nodes, landmarks, and spatial organization contribute to spatial legibility and identity. Recent studies emphasize that spatial identity emerges through the interaction between physical environmental characteristics, spatial configuration, and user experience (Montgomery, 2016; Carmona, 2019; Pallasmaa, 2012). Material, color, texture, lighting, and spatial organization influence environmental perception and contribute to identity formation. In shopping malls, spatial identity plays a critical role in shaping user perception, environmental experience, and spatial preference, as users interact continuously with the interior spatial environment (Çavka, 2023; Rosenbaum et al., 2017). Environmental comfort, atmospheric quality, and spatial coherence further influence users' emotional attachment and spatial experience.

1.3.1. *Urban Furniture and Products*

Urban furniture plays a significant role in meeting users' functional, social, and aesthetic needs while contributing to spatial identity (Yücel, 2006). These elements vary depending on spatial context, scale, and function, and should be compatible with their surroundings while reflecting the spatial character of the environment.

Lighting, seating, and floor covering elements are particularly influential in shaping spatial perception, environmental quality, and user experience. In shopping mall interiors, urban furniture elements play a critical role in supporting user comfort, improving spatial organization, and strengthening spatial identity. These elements contribute to environmental legibility, guide user movement, and enhance

the overall experiential quality of indoor public environments (Carmona, 2019; Mehta, 2014). The design characteristics, material properties, and spatial arrangement of urban furniture influence how users perceive, interpret, and interact with shopping mall environments.

1.3.2. *Seating Elements*

Seating elements should possess certain characteristics in order to contribute to the formation of a space's identity and to reflect the character of the surrounding environment. Beyond fundamental qualities such as functionality, aesthetics, form, material, color, texture, and perceptibility, seating elements are also expected to embody a distinctive and original character that goes beyond conventional designs. When a space is considered as a whole, the harmony perceived among all its elements reflects its aesthetic value; accordingly, the overall beauty of a space depends on how successfully the relationships between its individual components are resolved (Aksu, 2012). Moreover, color, texture, and material can be evaluated within the context of the product-user-environment relationship. Among the factors influencing visual perception, color plays a particularly significant role. As an element that serves aesthetic purposes, defines the quality of space, and forms part of the perceptual system, color enhances the depth and dimensionality of both interior and exterior spaces by emphasizing materials, design features, and the furniture elements used within them (Aksu, 2012).

In shopping mall interiors, seating elements play an important role in supporting user comfort, rest, and spatial experience. The availability and spatial positioning of seating areas influence how users interact with the environment and how long they remain within the space (Rosenbaum et al., 2017). Well-located seating elements placed along circulation routes, atriums, and focal points contribute to spatial organization and enhance users' ability to perceive and use the space effectively (Berezko,

2021). In addition to their functional role, seating elements also contribute to spatial identity and environmental perception. The design characteristics of seating elements, including form, material, and spatial arrangement, affect users' visual perception and psychological comfort (Carmona, 2019). Comfortable and visually integrated seating elements strengthen users' sense of belonging and improve the overall user experience in indoor public environments such as shopping malls (Berezko, 2021). Therefore, seating elements—such as benches, chairs, and combined seating elements—should be designed in a way that balances visual appeal and functional performance, ensuring that they meet users' basic needs while also contributing to the establishment of spatial identity.

1.3.3. Floor Coverings

Floor coverings, as an integral component of urban furniture, play a significant role in shaping spatial identity and perception. They can be defined as safe, hard surfaces that physically and visually connect spaces while guiding users through the environment. As Önal (2019) emphasizes, floor coverings are not merely functional necessities but also planning elements that incorporate aesthetic principles. In this sense, floor coverings contribute not only to movement and safety but also to the spatial organization and visual continuity of a place. In contemporary interior public environments such as shopping malls, floor coverings also play a critical role in strengthening spatial continuity and supporting users' orientation and spatial understanding (Carmona, 2019; Berezko, 2021). The selection of flooring materials is determined by the requirements that emerge from the interaction between aesthetic considerations and functional performance. Accordingly, hard surfaces vary in terms of material, form, color, and texture depending on the spatial context in which they are applied (Nasar, 1994). Lynch (1960) similarly argues that surfaces and ground patterns are among the elements that strengthen

the imageability of a space by enhancing users' ability to perceive and remember spatial sequences. From this perspective, floor coverings function as a crucial tool for spatial legibility and orientation. Recent studies emphasize that variations in flooring material, texture, and color can influence user movement patterns, spatial perception, and behavioral responses, particularly in large-scale interior environments such as shopping malls and public buildings (Zhang et al., 2024; Iftikhar et al., 2020). In both outdoor and indoor environments, floor coverings may also be used to divide spaces, define different zones, and support wayfinding. In interior spaces, the use of contrasting materials—such as rubber, granite, or wood—can subtly direct user movement and emphasize functional distinctions within the same environment. Such material differentiation helps users cognitively interpret spatial hierarchy and circulation routes, thereby improving spatial legibility and enhancing user experience (Arthur & Passini, 1992). As Pallasmaa (2005) notes, materiality and surface texture have a direct impact on sensory perception and the user's bodily experience of space. Therefore, variations in flooring materials influence not only visual perception but also tactile and experiential dimensions of space, ultimately shaping users' overall spatial experience and sense of identity. In shopping mall interiors, flooring design contributes not only to functional circulation but also to the creation of spatial identity and the strengthening of user–environment interaction, making it a fundamental component of interior spatial quality (Carmona, 2019; Iftikhar et al., 2020).

2. Material and Methods

2.1. Material

The research population of this study comprises Panora Shopping Mall and Kentpark Shopping Mall, both located in Ankara and representing contemporary examples of shopping malls with strong architectural identities. Kentpark Shopping Mall is located

along the Ankara–Eskişehir Highway, one of the city’s major transportation axes, and includes approximately 235,000 m² of enclosed space, incorporating retail, leisure, and office functions. Panora Shopping Mall, on the other hand, is located in the Oran district and occupies an area of approximately 180,000 m², serving primarily as a neighborhood-oriented shopping destination. The selection of these two shopping malls was intentional and based on several criteria. First, both malls possess architectural focal points that contribute to spatial orientation and identity, such as central atriums, circulation cores, and visually dominant interior spaces. According to Lynch (1960), focal points and landmarks play a crucial role in users’ spatial perception and cognitive mapping of environments. In this context, the spatial organization of Kentpark is characterized by an "indoor street" concept and a linear circulation system that connects various activity nodes. As illustrated in Figure 1, the ground-floor exhibition area and the second-floor internal street function as primary nodes for user interaction.

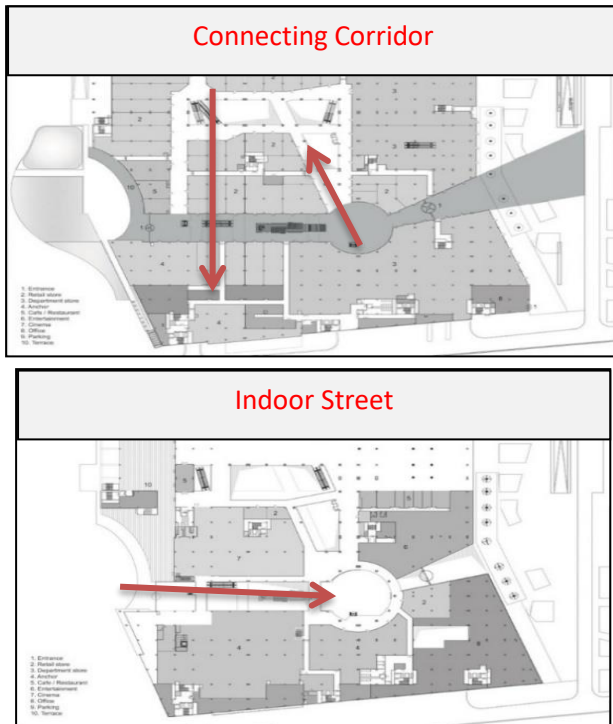


Figure 1. Floor plans of Kentpark Shopping Mall

Conversely, Panora’s spatial layout is centered around a massive atrium and gallery voids that enhance visual permeability across all floors. The distribution of focal points, such as the aquarium area and central void, can be seen in the architectural plans (Figure 2).

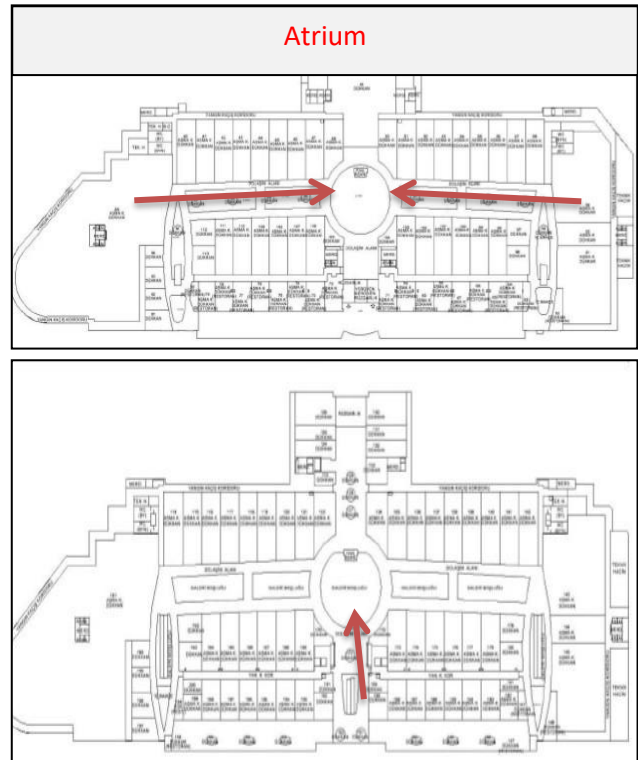


Figure 2. Floor plans of Panora Shopping Mall

These floor plans illustrate the strategic positioning of circulation paths and focal areas where furniture elements are most densely located. Second, the two shopping malls differ significantly in terms of accessibility and user profile. Kentpark Shopping Mall is located on a major transportation corridor and is easily accessible by public transportation and private vehicles, attracting users from diverse socio-economic backgrounds. In contrast, Panora Shopping Mall primarily serves residents from nearby districts characterized by a higher income level, such as Yıldız, Birlik, Sancak, Oran, and İncek. This distinction allows for a comparative evaluation of how user expectations, socio-economic characteristics,

and lifestyle differences influence interactions with furniture elements and spatial products.

By integrating the architectural floor plans and visual documentation into this section, the study establishes a physical framework for the subsequent analysis of user interaction. Shopping malls are widely recognized in the literature as hybrid public spaces that combine consumption, social interaction, and leisure activities (Goss, 1993; Crawford, 2002). In this context, interior furniture elements and products play a critical role in shaping user comfort, spatial behavior, and overall environmental perception (Nasar, 1994; Pallasmaa, 2005). By selecting two shopping malls with contrasting spatial and socio-economic characteristics, this study aims to analyze how furniture design and placement affect user experience, particularly for families with young children.

2.2. The Methods

2.2.1. *Determination of Research Methods*

This study adopts a mixed-methods research approach, combining qualitative and quantitative techniques to investigate the relationship between interior furniture elements, spatial perception, and user interaction in shopping malls. Initially, a comprehensive literature review was conducted to establish the theoretical framework of the research. The literature review focused on key concepts such as public space, shopping malls as contemporary public spaces, spatial identity, interior furniture elements, and user perception. Previous studies emphasize that shopping malls function not only as commercial environments but also as social and experiential public spaces where users spend extended periods of time (Gehl, 2011; Relph, 1976). Furniture elements such as seating, lighting, and floor materials significantly influence user comfort, orientation, and sense of belonging, thereby shaping spatial perception and identity (Pallasmaa, 2005; Lynch, 1960). In this context, furniture elements are considered not merely functional

components but also design tools that enhance spatial meaning and user experience.

In the second phase of the research, a structured face-to-face interview method was employed to systematically collect user-based data and complement observational findings. This method was preferred because it allows direct interaction with participants and enables a more detailed understanding of user experiences, perceptions, and behaviors in relation to furniture elements. The study specifically focused on families with children aged 0–6, as this age group demonstrates a high level of interaction with environmental elements and spatial stimuli. The structured face-to-face interview consisted of two main sections: shopping mall preferences and shopping mall–furniture–user interaction.

During the interviews, participants were asked standardized questions regarding their shopping mall preferences, their evaluations of furniture elements, and their observations of their children's interaction with these elements. Particular emphasis was placed on understanding how furniture elements influence children's safety, mobility, and spatial engagement, as well as parental comfort, supervision, and overall spatial experience.

The structured face-to-face interviews were conducted with 20 families selected through voluntary participation. The collected data was systematically analyzed to evaluate the functional performance, usability, and spatial effectiveness of key furniture elements, including seating units, lighting elements, and floor coverings. According to environmental psychology studies, these elements play a crucial role in shaping emotional responses, spatial orientation, and behavioral patterns (Mehrabian & Russell, 1974; Nasar, 1994).

Furthermore, the interview data enabled the identification of user needs, expectations, and spatial preferences. The findings were interpreted through comparative analysis and presented using tables and figures to improve clarity and analytical readability. Based on these

analyses, design-oriented recommendations were developed to enhance spatial quality and improve user experience, particularly for families with young children. In this way, the study contributes both to academic research and to design practice by providing an applicable framework for user-centered spatial design.

2.2.2. Data Collection Process and Validity/Reliability

In this study, both primary and secondary data collection techniques were employed in accordance with the research objectives and scope. A comprehensive literature review was conducted to establish the theoretical framework of the study, while a structured face-to-face interview method was used to obtain direct user experiences and evaluate the relationship between spatial environment, furniture elements, and user interaction. This combined approach enabled the integration of theoretical knowledge with empirical user-based evidence, ensuring a comprehensive research framework.

Several methodological measures were implemented to ensure the validity and reliability of the study. The structured face-to-face interview method is recognized as a reliable qualitative data collection technique, as it allows clarification of participant responses and reduces the risk of misinterpretation (Berezko, 2021; Flick, 2022). Accordingly, the interview questions were developed based on recent literature focusing on spatial perception, user experience, and the role of furniture elements in shaping environmental interaction. The questions were carefully structured to be clear, neutral, and non-leading, thereby strengthening the internal validity of the research.

Conducting the interviews face-to-face ensured that participants fully understood the questions and provided accurate and complete responses. This approach enhanced the consistency and credibility of the collected data by enabling direct interaction between the researcher and participants (Flick, 2022). The sample was selected using purposive sampling,

targeting parents with children aged 0–6 who actively interact with furniture elements in shopping mall environments. This sampling strategy is widely used in qualitative research to obtain in-depth insights from specific user groups relevant to the research objectives (Creswell & Plano Clark, 2017).

The collected data was analyzed using descriptive analysis techniques to ensure systematic and transparent interpretation. Presenting the findings through structured comparisons and tabulated evaluations improved clarity and analytical consistency. Furthermore, comparing the findings with existing literature supported the external validity of the study and strengthened the transferability of the results to similar spatial and user-centered contexts (Flick, 2022). The literature-based development of the data collection instrument, the systematic implementation of structured face-to-face interviews, and the transparent analytical process demonstrate that the study achieves an acceptable level of scientific validity and reliability.

2.2.3. Literature Review

The research process initially began with a comprehensive literature review. Within this scope, searches were conducted in university libraries, printed sources, and electronic databases (academic journals, theses, books, and conference proceedings) using key concepts such as public space, shopping malls, spatial perception, spatial identity, furniture elements, product–user relationship, and spatial use of families with children. Systematic literature review is widely recognized as a fundamental method for establishing a strong theoretical and conceptual foundation in environmental design and spatial perception studies (Creswell & Plano Clark, 2017; Snyder, 2019). The obtained sources were systematically examined, and additional relevant studies were accessed through the reference lists of key publications. This process enabled the identification of key theoretical approaches

and empirical findings related to user experience, spatial perception, and environmental behavior in interior public environments such as shopping malls (Erdoğan et al., 2023).

Based on the primary and secondary sources identified during the literature review, the conceptual and theoretical framework of the research was established. Previous studies emphasize that shopping malls function not only as commercial environments but also as contemporary public interior spaces that support social interaction, spatial experience, and user engagement (Carmona, 2019). In this context, the public space qualities of shopping malls, spatial identity formation, and the relationship between products, furniture elements, and users were examined from a theoretical perspective. Furniture elements such as seating units, lighting systems, and floor coverings have been identified as critical environmental components influencing spatial perception, user comfort, and behavioral responses (Pallasmaa, 2005; Levinson, 2003; Zejnilovic et al., 2023). Furthermore, spatial perception is shaped through the interaction between environmental characteristics and user needs, expectations, and experiences, particularly in interior environments designed for diverse user groups such as families with children (Zejnilovic et al., 2023).

2.2.4. Structured Interview Implementation

In the implementation phase of the study, the structured face-to-face interview method was employed to identify how furniture elements located in the selected shopping malls are perceived by users and to evaluate their contribution to spatial perception. This method is widely used in environmental design and user experience research to obtain direct information about users' perceptions, preferences, and spatial evaluations (Creswell & Plano Clark, 2017).

Within this scope, the opinions and experiences of families with children aged 0–6

were collected, as this user group interacts intensively with interior furniture elements and demonstrates high sensitivity to spatial stimuli. Previous studies emphasize that children and their caregivers exhibit strong behavioral and perceptual responses to environmental features such as furniture elements, spatial layout, and material characteristics, making this group particularly suitable for evaluating spatial perception and usability in interior public environments (Zhang et al., 2024). The interviews were conducted face-to-face in the selected shopping mall environments. During the interviews, participants were asked structured questions regarding their perceptions of seating elements, lighting systems, floor coverings, and their children's interactions with these elements. This process enabled the direct evaluation of user experiences and the identification of relationships between furniture elements and spatial perception.

2.2.5. Sample Selection

The sample of the study was determined using the purposive sampling method. This method was preferred because the research focuses on a specific user group, namely families with children aged 0–6. Due to limitations related to time and accessibility, and because the aim was not statistical generalization but an in-depth evaluation of user perceptions, no statistical sample size calculation formula was applied. Instead, a sample size sufficient to support qualitative interpretation and descriptive comparison was targeted. This study adopts an exploratory case study approach aimed at understanding user experience and spatial perception within specific shopping mall environments rather than achieving statistical generalization. Structured interviews are widely used in environmental design and spatial perception research to obtain in-depth insights into user–environment interaction (Creswell & Plano Clark, 2017). Previous studies indicate that purposively selected small samples are sufficient to identify

spatial perception patterns and user experience characteristics in case-based environmental research (Berezko, 2021). Therefore, the sample consisting of 20 families is considered appropriate for the exploratory scope and objectives of this study.

- Structure of the Structured Interview Form

The structured interview form was organized into three main sections:

First Section: Participants were informed about the purpose and scope of the study, and basic demographic information was collected, including the age of the child and the number of children.

Second Section: Questions related to shopping mall usage patterns were included, such as visit frequency, preferred visiting times, and duration of stay.

Third Section: This section focused on the relationship between shopping mall environments, furniture elements, and users. Questions examined spatial perception, the functional and perceptual role of furniture elements (seating, lighting, and floor coverings), children's interaction with these elements, and parents' evaluations of comfort and usability.

- Question Types and Evaluation Framework

The structured interview included both open-ended and closed-ended questions to capture user experiences and spatial evaluations. Open-ended questions allowed participants to express their perceptions in detail, while closed-ended questions enabled systematic comparison across participants. For evaluative statements, ordinal response categories were used: Never, Rarely, Sometimes, Often, and Always. These categories supported consistent interpretation while maintaining the qualitative depth of the structured interview approach. In addition, Yes/No questions were used to obtain clear responses regarding specific spatial and functional conditions. This framework enabled

descriptive comparison and interpretation without aiming for statistical generalization.

- Implementation Process

Structured face-to-face interviews were conducted in the selected shopping malls to evaluate users' perceptions of furniture elements and their contribution to spatial perception. Conducting interviews in person ensured that participants clearly understood the questions and improved the accuracy and completeness of responses. The collected data was systematically analyzed and presented in the findings section using tables and graphical representations to support interpretation of user perceptions and spatial experience.

2.2.6. Data Analysis

The data obtained through the structured interviews was analyzed using descriptive analysis methods. Since the interview form included ordinal response categories (Never, Rarely, Sometimes, Often, Always) and binary (Yes/No) responses, frequency (f) distributions were used as the primary analytical approach to summarize participant responses.

Initially, the collected data was reviewed and organized, and incomplete or invalid interview forms were excluded from the analysis. The valid data was then transferred to Microsoft Excel, where tables, charts, and graphs were generated to visually represent the findings. This process enabled a clear presentation of users' shopping mall preferences, perceptions of furniture elements, and children's interaction with these elements. The analysis particularly focused on the following aspects:

- Shopping mall usage patterns, including visit frequency and duration of stay
- The perceived effects of furniture elements (seating elements, lighting elements, and floor coverings) on spatial perception
- Children's interaction with furniture elements
- Parents' perceptions of comfort, usability, and spatial experience

The findings were interpreted in relation to the theoretical framework established through

the literature review. This approach enabled the integration of empirical observations with theoretical perspectives on spatial perception and user–environment interaction. The results were presented in the findings section using tables and graphical representations to support clear interpretation. The numerical distributions were used to facilitate descriptive comparison and to identify general patterns in user perception within the case study context, without aiming for statistical generalization.

3. Findings

3.1. Socio-Economic Profile and Usage Patterns of Participants

The socio-economic characteristics of users and their shopping mall usage patterns provide an important framework for understanding user–furniture interaction and spatial behavior. The age distribution indicates that the dominant user group in both Kentpark and Panora Shopping Malls consists of individuals aged 30 and above, followed by the 26–30 and 22–26 age groups. This age profile reflects the predominance of adult users who are likely to visit shopping malls with young children, thereby directly influencing furniture usage patterns and spatial interaction.

Educational background differs slightly between the two malls. Kentpark users consist primarily of high school and university graduates (80%) (f=16), whereas Panora users demonstrate a higher educational profile, with 80% (f=16) holding university degrees and 20% (f=4) holding master's degrees. Gender distribution also shows variation. Female users constitute 60% (f=12) of Kentpark users and 80% (f=16) of Panora users. This higher proportion of female users is particularly relevant, as caregiving roles often increase interaction with seating, safety-related furniture elements, and child-supportive spatial features.

Income distribution indicates that both malls are primarily used by middle-income groups. At Kentpark, 70% (f=14) of users fall within the 25,000–44,999 TL monthly income

range, followed by 20% (f=4) in the lower income range and 10% (f=2) in the middle-upper income range. In contrast, Panora users demonstrate a relatively higher income profile, with 70% (f=14) in the middle-income group and 30% (f=6) in the middle-upper income group. This socio-economic distinction suggests that user expectations regarding comfort, material quality, and spatial design may differ between the two shopping malls.

Usage frequency analysis indicates that both shopping malls are regularly integrated into users' routines. Kentpark is visited once a week by 40% (f=8) of users and several times per week by another 40%, while Panora is visited once a week by 40% and several times per week by 30% (f=6) of users (Figure 3).

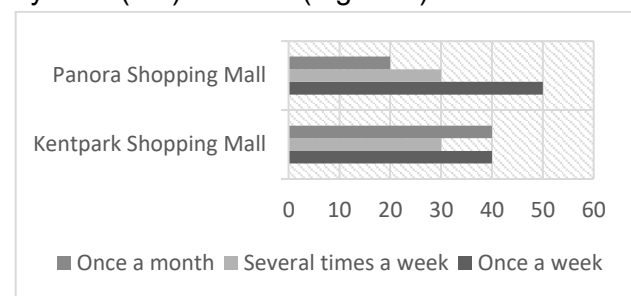


Figure 3. Users' preferred visiting times of the shopping malls

Both malls are primarily visited on weekends, particularly Kentpark (80%) (f=16) and Panora (60%) (f=12) (Figure 4).

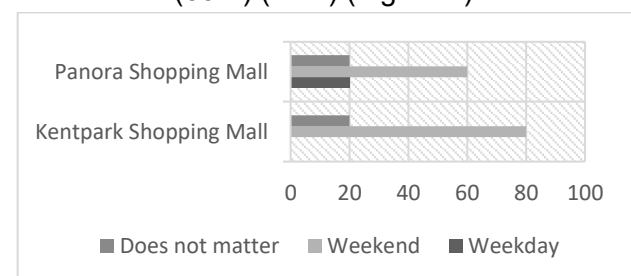


Figure 4. Typical visiting times of users in the shopping malls

Visit duration differs between malls. At Kentpark, 40% (f=8) of users spend 1–2 hours and 40% (f=8) spend 2–3 hours, whereas at Panora, 60% (f=12) of users spend 2–3 hours and 30% (f=6) spend 3–5 hours (Figure 5).

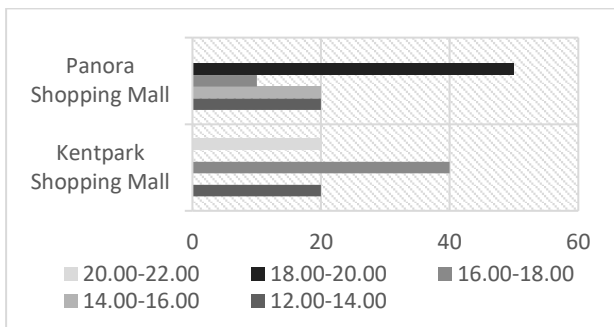


Figure 5. Users' preferred visiting time intervals for the shopping malls

This indicates longer engagement periods in Panora, suggesting a stronger spatial attachment or higher spatial comfort level.

Transportation preferences also vary. While 90% (f=18) of Panora users arrive by private vehicle, 30% (f=6) of Kentpark users rely on public transportation (Figure 6).

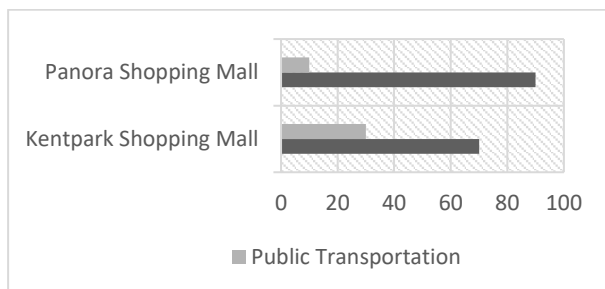


Figure 6. Users' transportation preferences

This difference reflects the influence of accessibility and urban integration on shopping mall usage patterns. These findings demonstrate that both shopping malls function not only as commercial environments but also as important social and recreational spaces. Socio-economic characteristics and usage patterns play a critical role in shaping how users interact with furniture elements and perceive spatial quality.

3.2. Spatial Distribution of Furniture Elements within Circulation Patterns

The spatial distribution of furniture elements significantly influences user interaction, spatial perception, and usage intensity. Observations indicate that in both

shopping malls, furniture elements—including seating units, lighting elements, and floor coverings—are primarily located in high-activity areas such as exhibition zones, atriums, and retail circulation corridors. In Kentpark Shopping Mall, the ground-floor exhibition area represents one of the most actively used spatial zones. This area features colorful plastic floor coverings, ergonomic seating units, and integrated lighting elements designed to support both play and supervision. Observations indicate that children actively use this space for play, while parents utilize nearby seating units for supervision and rest (Figure 7).

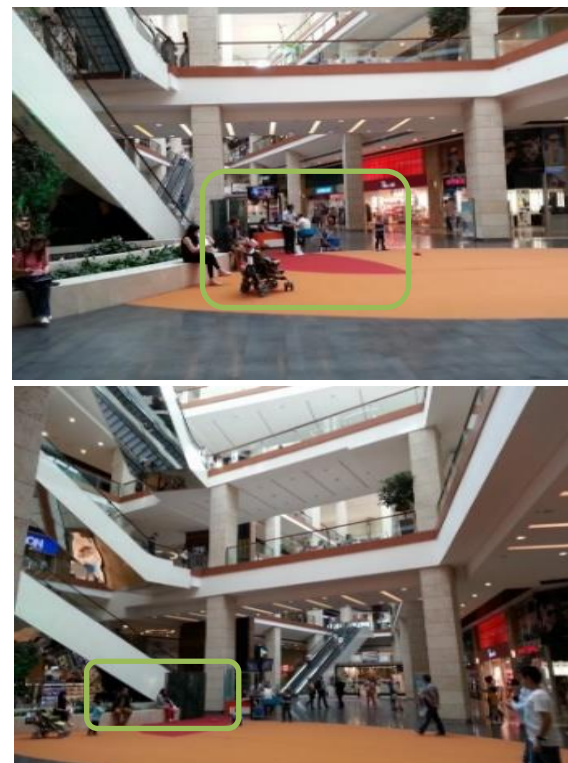


Figure 7. Floor covering and seating elements in the play/exhibition area of Kentpark Shopping Mall

This spatial configuration promotes simultaneous child activity and parental comfort, strengthening product-user interaction. Similarly, the interior street on the second floor of Kentpark Shopping Mall contains LED lighting elements and seating units positioned along the circulation axis. Observations indicate that children interact with the LED lighting elements

as playful features, while parents use seating units for resting and supervision (Figure 8). This demonstrates that lighting elements can function not only as illumination tools but also as interactive spatial components.



Figure 8. Floor covering, seating elements, and lighting elements in the interior street of Kentpark Shopping Mall

In Panora Shopping Mall, the atrium and exhibition area represent the primary zones of interaction between users and furniture elements. These areas include mosaic floor coverings, seating units, and natural lighting elements that support free movement for children and supervision by parents (Figure 9).

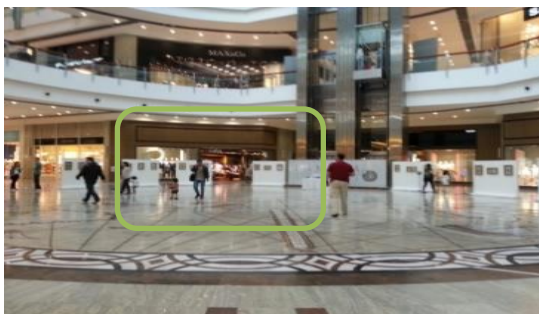


Figure 9. Floor covering and lighting elements in the exhibition area of Panora Shopping Mall

The integration of seating, lighting, and safe flooring materials enhances spatial usability and interaction intensity. Furniture elements located in circulation corridors and transitional spaces in both shopping malls serve primarily functional purposes. These elements support movement and short-term use rather than prolonged interaction. Observations indicate that areas combining seating and lighting elements demonstrate higher levels of usage compared to purely transitional areas. The comparative spatial analysis indicates that both shopping malls strategically position furniture elements in high-activity areas to enhance comfort, safety, and interaction. Ground-floor atrium and exhibition areas function as child-oriented spatial zones, while upper-floor corridors primarily serve circulation purposes. These findings confirm that furniture placement, spatial configuration, and integration with circulation patterns directly influence spatial behavior, interaction intensity, and user experience (Table 1).

Table 1. Spatial Distribution of Furniture Elements and Associated User Interaction in Circulation and Focal Areas

Spatial Area Type	Seating Elements		Lighting Elements		Floor Coverings		User Interaction	
	Kentpark	Panora	Kentpark	Panora	Kentpark	Panora	Kentpark	Panora
Atrium / Exhibition / Focal Area (Ground Floor)	Present, ergonomic and child-friendly	Present, adjacent to atrium	LED floor lights and vertical lighting	General lighting with minimal variation	Colorful plastic flooring (orange, red, blue)	Mosaic flooring	High interaction; children actively use the space for play, parents supervise comfortably	High interaction; children move freely, seating supports parental supervision
Circulation Corridor / Internal Street (Upper Floors)	Present, located along circulation corridors	Present, located near focal points (aquarium area)	Fluorescent and LED vertical lighting	General lighting	Standard flooring	Standard flooring	Moderate use; primarily transitional, limited child-focused interaction	Moderate use; seating supports supervision, spatial elements function consistently

3.3. Thematic Analysis of Furniture Elements and User Interaction

3.3.1. Seating Elements and Social Interaction

Seating elements emerged as the most prominent and frequently used furniture components in both Kentpark and Panora Shopping Malls, playing a critical role in supporting user comfort and facilitating social interaction. Structured interview results indicate that seating units were identified as the most prominent product group by 90% (f=18) of Kentpark users and 100% (f=20) of Panora users (Figure 10).

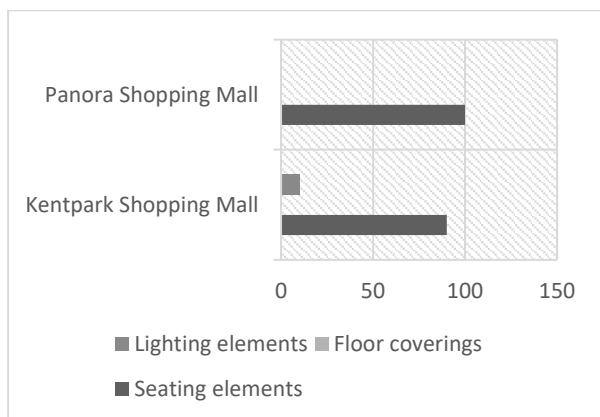


Figure 10. Prominent product groups

This finding highlights the central role of seating elements in shaping spatial experience and user engagement. The primary function of seating elements in both shopping malls was associated with resting rather than waiting. At Kentpark Shopping Mall, 90% (f=18) of users reported using seating units for resting, while only 10% (f=2) used them for waiting purposes. Similarly, at Panora Shopping Mall, 80% (f=16) of users used seating units for resting and 20% (f=4) for waiting (Figure 11).

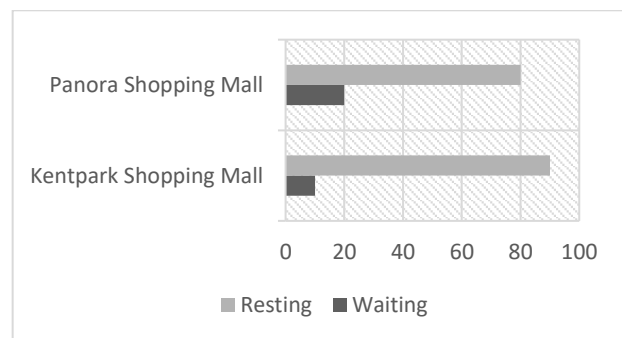


Figure 11. Usage purposes of seating elements

This pattern indicates that seating elements serve as essential components supporting prolonged spatial use and user comfort, particularly for families with young

children. The spatial positioning of seating elements was also evaluated positively by users. At Kentpark Shopping Mall, 70% (f=14) of users approved of seating units being located near retail stores, while 20% (f=4) expressed dissatisfaction. In contrast, all users at Panora Shopping Mall approved of seating placement near retail areas (100%) (f = 20), emphasizing its importance for resting and supervising children (Figure 12).

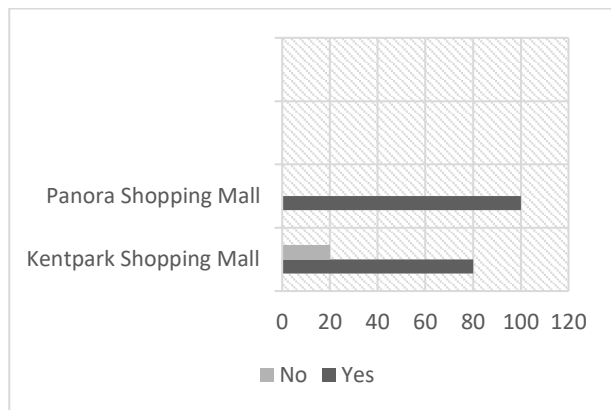


Figure 12. User interaction with seating elements

These results suggest that proximity between seating elements and activity zones enhances usability and supports family-oriented spatial behavior. However, users expressed mixed opinions regarding the adequacy of spacing between seating elements. At Kentpark Shopping Mall, only 30% (f=6) of users considered seating distances adequate, whereas 70% (f=14) found them insufficient. In Panora Shopping Mall, responses were evenly distributed, with 50% (f=10) indicating adequate spacing and 50% indicating inadequacy. This finding suggests that while seating elements are widely used, their spatial arrangement may influence comfort levels and overall user satisfaction. In terms of overall adequacy, 80% of Kentpark users and 90% (f=18) of Panora users stated that furniture elements, including seating units, met their needs (Figure 13).



Figure 13. Adequacy of furniture elements in meeting user needs

This result confirms that seating elements significantly contribute to user satisfaction and functional performance within shopping mall environments. Furthermore, users reported that furniture characteristics such as material, color, and form influenced spatial preferences. At Kentpark Shopping Mall, 60% (f=12) of users indicated that these features affected their spatial choices, whereas all users at Panora Shopping Mall reported that furniture design influenced their preferences. This finding highlights the importance of design quality in strengthening user–environment interaction and enhancing spatial experience. Seating elements represent the most influential furniture type affecting user comfort, spatial use, and family-centered interaction patterns.

3.3.2. Lighting Elements and Wayfinding

Lighting elements were found to play a significant role in influencing spatial perception, orientation, and user experience in both shopping malls. Structured interview results indicate that lighting placement positively influenced spatial perception for 50% (f=10) of Kentpark users and 70% (f=14) of Panora users, while 40% (f=8) of Kentpark users and 20% (f=4) of Panora users reported no clear awareness of its effect (Figure 14).

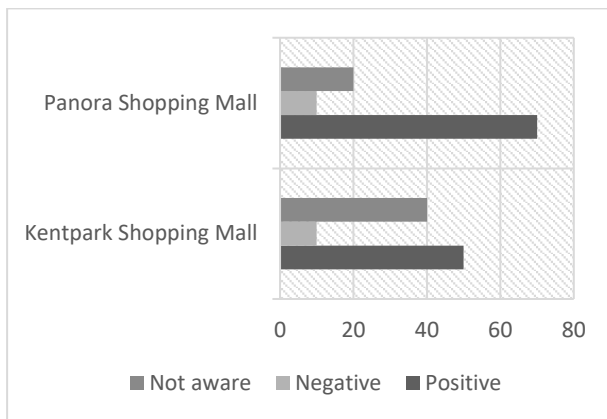


Figure 14. The impact of lighting design on user experience

These findings suggest that lighting contributes to spatial experience, although its impact may not always be consciously perceived by users. The guiding function of lighting was also strongly supported by user responses. At Kentpark Shopping Mall, 80% (f=16) of users stated that brightly illuminated areas facilitated wayfinding, while 20% (f=4) disagreed. In contrast, all Panora Shopping Mall users indicated that lighting contributed positively to spatial orientation. This result highlights the critical role of lighting in improving spatial legibility and navigation within complex indoor environments.

Conversely, dark areas were widely perceived as spatially restrictive. In both shopping malls, 90% (f=18) of users reported that poorly illuminated areas created a sense of enclosure, while only 10% (f=2) did not share this perception. This finding indicates that insufficient lighting may negatively affect perceived spatial comfort and accessibility. Despite the positive influence of lighting on wayfinding, floor coverings were not perceived as directional elements. The majority of users in both shopping malls reported that floor materials did not contribute significantly to navigation. This result emphasizes that lighting elements play a more dominant role in spatial orientation compared to other furniture components.

Lighting elements were also considered essential for children's safety and mobility. All respondents in both shopping malls emphasized

that lighting was important for enabling children to move safely and comfortably within the space. This finding underscores the importance of adequate lighting design in supporting child-friendly environments and enhancing overall spatial usability. In addition, lighting elements contributed to the visual identity of shopping mall environments. At Kentpark Shopping Mall, 70% (f=14) of users reported that furniture and lighting elements influenced visual identity, while 60% (f=12) of Panora users expressed similar views (Figure 15).

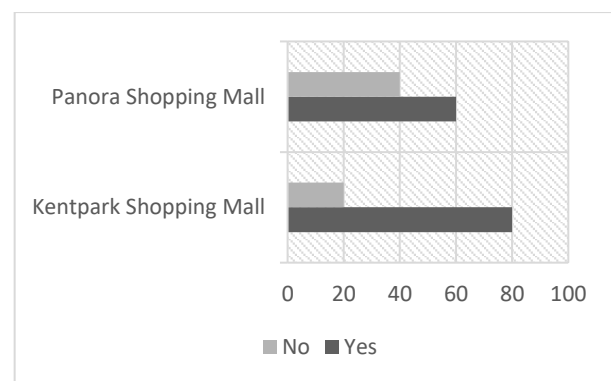


Figure 15. Impact of furniture elements on visual identity

This result indicates that lighting plays a dual role, contributing both to functional orientation and to the symbolic and perceptual qualities of space. Lighting elements significantly influence user perception, spatial orientation, and environmental experience in both shopping malls.

3.3.3. Floor Coverings and Safety

Floor coverings were evaluated primarily in relation to child safety, spatial comfort, and functional suitability. Structured interview results indicate that users generally did not perceive floor coverings as effective wayfinding tools. Instead, floor materials were evaluated mainly in terms of safety and usability. Regarding suitability for children, 20% (f=4) of Kentpark users and 30% (f=6) of Panora users considered floor coverings appropriate for children's use, while 80% (f=16) and 70% (f=14), respectively, expressed negative opinions. This finding indicates that existing floor materials may not

fully meet user expectations in terms of child safety and usability.

The adequacy of children's play areas was also evaluated critically. At both shopping malls, 60% (f=12) of users reported that play areas were insufficient, while only 40% (f=8) considered them adequate (Figure 16). This result suggests a need for improved child-oriented spatial design and safer, more supportive floor environments.

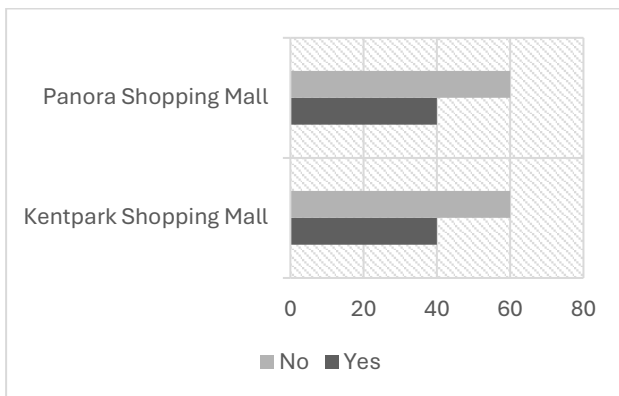


Figure 16. Adequacy of children's play areas

Despite these limitations, floor coverings contributed to spatial identity and environmental perception. At Kentpark Shopping Mall, colorful plastic floor coverings created visually distinctive and interactive environments, while mosaic flooring in Panora Shopping Mall provided a more neutral and uniform spatial experience. These differences demonstrate how floor material and design influence spatial character and user perception.

Furthermore, users reported that furniture elements, including floor coverings, had a significant impact on children's spatial behavior. At Kentpark Shopping Mall, 90% (f=18) of users stated that furniture elements influenced children's spatial experience, while 80% (f=16) of Panora users reported similar effects (Figure 17).

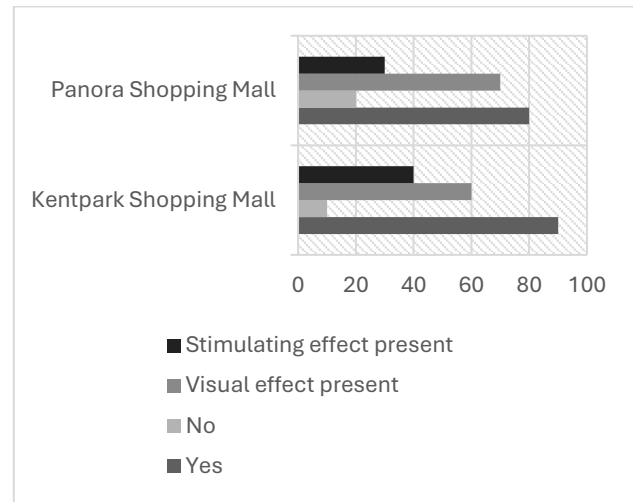


Figure 17. Impact of furniture elements on children

This finding confirms that floor materials and associated furniture elements play an important role in shaping children's interaction with space. While floor coverings contribute to spatial identity and environmental perception, their effectiveness in supporting child safety and functional usability remains limited compared to seating and lighting elements.

The evaluation demonstrates that seating elements primarily support social interaction and user comfort, lighting elements enhance spatial orientation and perception, and floor coverings contribute mainly to spatial identity while showing limitations in terms of child safety and usability. Comparative analysis between Kentpark and Panora Shopping Malls indicates that although both environments provide functional furniture systems, differences in material selection, spatial organization, and design strategies influence user perception, satisfaction, and spatial behavior (Table 2).

Table 2. Comparative Thematic Analysis of Furniture Elements and User Interaction in Kentpark and Panora Shopping Malls

Furniture Element	Evaluation Criteria	Kentpark Shopping Mall	Panora Shopping Mall
Seating Elements	Prominence and usage	Most prominent element; widely used for resting and supervision	Most prominent element; consistently used for resting and supervision
	Spatial placement	Generally appropriate, but some limitations in spacing and distribution	Well-positioned; supports resting and child supervision effectively
	User satisfaction	Adequate overall, but some users reported spatial insufficiencies	Higher overall satisfaction with seating availability and placement
	Social interaction support	Supports resting and parent–child interaction	Strongly supports resting, supervision, and prolonged spatial use
Lighting Elements	Spatial orientation and wayfinding	Supports wayfinding, but user awareness varies	Strongly supports spatial orientation and navigation
	Spatial comfort and perception	Bright areas improve comfort; dark areas perceived negatively	Lighting provides clearer spatial perception and orientation
	Child safety and mobility	Considered important for child safety and movement	Considered essential for child safety and spatial usability
	Contribution to visual identity	Contributes to spatial character and perception	Strong contribution to spatial perception and environmental clarity
Floor Coverings	Functional suitability	Limited suitability for child use; safety concerns reported	Limited suitability; slightly more positively perceived than Kentpark
	Wayfinding function	Not perceived as an effective guiding element	Not perceived as a guiding element
	Spatial perception and identity	Colorful flooring enhances visual stimulation and interaction	Mosaic flooring provides neutral and consistent spatial character
	Support for child-friendly environment	Provides visual engagement but limited functional support	Provides spatial continuity but limited child-oriented functionality

4. Discussion

The discussion interprets the findings within the framework of environmental psychology, spatial perception, and child-oriented design literature. The findings of this study highlight important aspects of product–user interaction within commercial public spaces, particularly shopping malls, and emphasize the role of furniture elements in shaping spatial perception and user behavior. Shopping malls are increasingly recognized as hybrid public environments that combine retail, leisure, and social interaction, functioning as important indoor public spaces for families and children (Goss, 1993; Crawford, 2002; Stillerman & Salcedo, 2012). Recent studies further emphasize that contemporary shopping malls serve as experiential environments where

spatial design elements directly influence user satisfaction, behavioral patterns, and duration of stay (Gilboa et. al., 2015). The comparative analysis of Kentpark and Panora Shopping Malls reveals both commonalities and differences that contribute to a nuanced understanding of how environmental design supports family-centered experiences.

One prominent observation is the critical role of seating elements as the most prominent and frequently utilized furniture elements across both malls, particularly among families with young children. This finding is consistent with the work of Gehl (2011), who emphasizes that well-designed seating in public spaces enhances user comfort, supports social interaction, and encourages longer stays. Similarly, seating elements significantly influence users' dwell

time, perceived comfort, and overall spatial satisfaction, particularly for families and caregivers responsible for supervising children (Zhang, Fei, & Wang, 2024). The higher preference for seating elements over lighting fixtures—especially in Panora Mall where 100% (f=20) of users identified seating units as prominent—indicates that physical comfort and resting opportunities remain a primary need for families visiting such environments (Marcus & Sarkissian, 1986). This is particularly critical in child-accompanied visits, where seating enables passive supervision and supports longer and more comfortable use of commercial environments (Van Melik & Althuizen, 2020). Moreover, the differences in visual identity impact between the two malls underscore the importance of context-sensitive design strategies. Kentpark's more vibrant and colorful design approach, particularly through the use of LED floor lights and colorful floor coverings, appears to foster stronger visual engagement, as reflected by 70% (f=14) of users acknowledging its effect on visual identity. This finding corroborates the assertion by Pallasmaa (2005) that sensory and visual stimuli play a pivotal role in enhancing spatial experience and identity formation in built environments. Recent studies focusing on child-oriented spatial perception further demonstrate that children are particularly responsive to colorful, visually stimulating, and interactive spatial elements, which enhance exploration, engagement, and spatial familiarity (Woolley & Lowe, 2013). Panora's subtler approach, with mosaic flooring and natural lighting, although less emphatic in visual impact (60%, f=12 positive response), may cater to different aesthetic preferences and reflect socio-economic distinctions among user groups, as noted in the demographic profiles. This finding is consistent with research indicating that users' socio-economic background influences expectations regarding environmental quality, material selection, and design aesthetics in commercial environments (Mehta et. al.,

2014). The role of lighting and brightness in wayfinding is another critical factor. The overwhelming positive response regarding the guiding effect of bright areas (80%, f=16 in Kentpark, 100%, f=20 in Panora) aligns with prior research emphasizing the contribution of lighting design to spatial legibility and navigational ease (Bitner, 1992; Ulrich, 1991). More recent studies in indoor retail environments confirm that lighting enhances spatial orientation, perceived safety, and environmental legibility, particularly for users navigating complex interior layouts such as shopping malls (Zali et. al., 2025). However, the spatial orientation challenges reported by half of Panora's users suggest that lighting alone may not be sufficient, pointing to the need for integrated signage and spatial cues, as also highlighted by Passini (1984). Enclosure perception in dark spaces reported by the majority of users (90%, f=18) in both malls resonates with Lynch's (1960) concepts of spatial clarity and territoriality, indicating that lighting levels directly affect feelings of comfort and security in public environments. This issue is especially critical for families with young children, as perceived safety strongly influences spatial preferences and duration of stay in indoor public environments (Van Melik & Althuizen, 2020). This reinforces the importance of carefully balancing lighting design to avoid both under-illumination, which can induce discomfort, and over-illumination, which might cause glare or visual fatigue.

Another significant aspect concerns the appropriateness of seating element spacing. The relatively low approval for seating proximity in Kentpark (30%, f=6) compared to an even split in Panora (50%, f = 10) suggests varied user expectations or differing spatial layouts. Research by Gehl (2011) stresses that optimal interpersonal distances in public seating can encourage social interaction without compromising personal space. Similarly, recent studies focusing on family-friendly environments

emphasize that seating layout and proximity directly affect parental supervision efficiency, children's independence, and perceived environmental safety (Mehta, 2014; Van Melik & Althuizen, 2020). This highlights the need for spatial configurations that support both rest and supervision functions simultaneously.

The structured interviews also reveal the influence of furniture elements' color, material, and form on spatial preferences, with a striking difference between Kentpark (60%, $f=12$ positive) and Panora (100%, $f=20$ positive) users. This finding supports the idea that materiality and aesthetics play a crucial role in user experience and place attachment, as noted by Heschong (1979) and later by Mehta (2014). Recent environmental psychology research further confirms that material quality, texture, and visual coherence significantly affect emotional responses, spatial attachment, and user satisfaction in indoor public environments (Low, 2000). Panora's users' stronger emphasis on these factors may be related to their higher socio-economic status and educational background, reflecting a greater sensitivity to design details (Florida, 2002). Regarding the adequacy of children's play areas, the fact that 60% ($f=12$) of users at both malls consider these spaces insufficient points to a critical gap in family-friendly design. This aligns with literature emphasizing the need for well-designed, safe, and engaging play environments within commercial settings to support child development and family satisfaction (Fjørtoft, 2004).

More recent studies focusing specifically on child-friendly commercial and public environments emphasize that children require spatial affordances that enable movement, exploration, and interaction, while also ensuring visibility and safety for caregivers (Woolley & Lowe, 2013). The absence or insufficiency of such elements may limit children's engagement and reduce the overall quality of family-oriented spatial experience. Finally, the high percentages

of users recognizing the impact of furniture elements on children (90%, $f=18$ in Kentpark and 80%, $f=16$ in Panora) highlight the essential role of design in fostering child-friendly environments. This concurs with findings from Chawla (2001), who argued that thoughtfully designed spaces can promote children's autonomy, exploration, and well-being. Child-responsive design in public and commercial environments enhances spatial usability, emotional comfort, and family satisfaction, reinforcing the importance of integrating child-centered design principles into interior spatial planning (Zhang et al., 2024).

In summary, the comparison between Kentpark and Panora Shopping Malls underscores how nuanced design choices—from furniture placement and materials to lighting and color schemes—directly influence user behavior, satisfaction, and spatial experience. The findings confirm that furniture elements function as critical spatial mediators that actively shape user perception, spatial behavior, and environmental experience (Gilboa et al., 2015). These results not only reaffirm existing theoretical frameworks on environmental psychology and design but also suggest practical implications for shopping mall design, particularly in catering to families with young children.

5. Conclusion and Recommendations

5.1. Conclusion

This study investigated the interaction between furniture elements and users, particularly families with children aged 0–6, in Kentpark and Panora Shopping Malls, with the aim of understanding how these interactions influence spatial perception and user experience. The findings demonstrate that furniture elements in shopping malls do not merely fulfill functional requirements but also play a significant role in shaping user behavior, reinforcing spatial identity, and supporting social interaction. The results indicate that seating

elements are the most prominent and frequently used furniture elements in both shopping malls. This highlights the importance of comfort, rest, and supervision needs for families with young children. In Kentpark Shopping Mall, areas designed with vibrant colors, LED floor lighting, and play-oriented floor coverings were found to have a strong impact on children's engagement with the space. In contrast, Panora Shopping Mall adopts a more restrained design approach, relying on natural lighting and neutral material choices, which also contribute positively to spatial perception, albeit in a different manner. Lighting design was identified as a crucial factor influencing wayfinding and spatial legibility. A large majority of users in both malls reported that bright areas facilitated orientation and movement within the space. However, the perception of enclosure in poorly lit areas indicates that lighting design directly affects users' sense of comfort and safety. Additionally, the spacing between seating elements was perceived as inadequate by a significant proportion of users in Kentpark Shopping Mall, suggesting that spatial layout decisions do not always align with user expectations.

Another notable finding concerns the adequacy of children's play areas. In both shopping malls, most users perceived these areas as insufficient, revealing a gap between user needs and existing spatial provisions. Nevertheless, the high percentage of users who acknowledged the impact of furniture elements on children confirms the importance of child-oriented design in commercial public spaces. The comparative analysis of Kentpark and Panora Shopping Malls demonstrates that furniture placement, material selection, color, and lighting strategies have a direct influence on spatial experience and user satisfaction. The findings emphasize the need for design approaches that are sensitive to the requirements of families with children and that support inclusive, safe, and engaging environments within shopping malls.

5.2. Recommendations

Based on the findings of this study, the following recommendations are proposed for the design and planning of furniture elements in shopping mall environments:

- In areas frequently used by families with children, floor coverings should be made of non-slip, impact-absorbing, and health-safe materials. Variations in color and texture should be used strategically to enhance children's interaction with the space and improve spatial legibility.
- Lighting design should adopt a balanced approach that enhances wayfinding, safety, and visual comfort. Poorly lit areas that may create feelings of enclosure should be avoided, and lighting elements should be designed in a way that consider children's perceptual and behavioral characteristics.
- Children's play areas within shopping malls should be improved not only in terms of quantity but also quality. These spaces should support physical, cognitive, and social development while ensuring safety and age-appropriate design.
- The color, form, and material of furniture elements should be selected with consideration of user profiles and socio-economic characteristics, allowing for flexible and adaptable design solutions that respond to diverse user expectations.
- Future research should include comparative studies of shopping malls in different cities, involve broader age groups, and employ longitudinal observation methods to further examine the long-term effects of furniture elements on user behavior and spatial perception.

In conclusion, this study highlights the critical role of furniture elements in shaping user experience within shopping malls and

underscores the importance of child-friendly, inclusive, and well-integrated design strategies. Implementing these recommendations can contribute to transforming shopping malls from purely commercial spaces into socially engaging and user-centered public environments.

Ethical Statement

This study was conducted in accordance with established ethical principles for scientific research. Participation in the study was entirely voluntary, and informed consent was obtained from all participants prior to data collection. The data were collected anonymously, and no personal or identifiable information was recorded. The research was carried out in publicly accessible shopping mall environments and included only adult participants (parents or caregivers). No direct data were collected from children, and no intervention was performed. The study adhered to ethical standards applicable to voluntary and anonymous survey-based research.

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