Research on the Impact of Public Interior Design and Spatial Layout on User Behavior

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Abstract

In modern society, the design of public places is crucial for providing a positive user experience and services. However, many interior designs in public places do not fully consider user behavior and needs, leading to unsatisfactory user experiences. Therefore, this article conducts in-depth research on perceptual factors such as visual, auditory, and tactile perception, as well as spatial layout and functional requirements. It is found that reasonable indoor design and layout have a significant impact on user emotions, behavior, and satisfaction. Corresponding optimization measures are proposed, including user participation and customized design, optimizing spatial streamline, improving environmental comfort and quality assurance, and advocating green and sustainable design. By meeting the personalized needs and promoting environmental awareness among users, excellent public interior design creates a more attractive and functional spatial environment. This, in turn, enhances social interactions, learning, work, and leisure activities, ultimately improving the overall quality of life in society. I hope this study can provide valuable references for future design and practice, enhance user comfort and satisfaction, and foster ongoing progress and innovation in public space design.

Keywords

Public interior design, Spatial layout, User behavior

Introduction

Public interior design and spatial layout have a profound impact on people's daily lives and social activities. In modern society, people spend most of their time in public environments, such as office spaces, shopping malls, hospitals, etc. The design and layout of public spaces are not only about aesthetics and practicality, but more importantly, how to meet the needs of users and provide a comfortable, efficient, and fully functional user experience. In this context, in-depth research on the impact of public interior design and spatial layout on user behavior, exploring the interrelationships between various perceptual factors and functional needs, has important theoretical and practical significance. This paper will explore optimization measures for public interior design based on perceptual factors such as vision, hearing, and touch, as well as spatial layout and functional requirements, with the aim of providing useful reference and guidance for creating a comfortable and efficient public space environment.

1. Spatial layout and functional requirements

1.1 Spatial Layout and Functional Zoning

Space layout is one of the core elements of public interior design, and by reasonably dividing and organizing the functions of different areas, it can provide a comfortable and efficient user experience. Reasonable spatial functional zoning can divide public spaces into different areas, such as work areas, meeting areas, rest areas in offices, product
display areas, cash register areas, and leisure areas in shopping malls (Liu Fuyuan, 2023). By carefully planning spatial functional zoning, the efficiency of space utilization can be improved, while meeting the needs of different users and enhancing the overall spatial experience.

1.2 Movement line and traffic efficiency

Good track planning and traffic efficiency are crucial for the design of public indoor spaces. The moving line refers to the user's movement path in space, while the traffic efficiency involves the smoothness and convenience of the user in the space. By properly planning the movement route, users can reduce their walking distance, improve mobility efficiency, and avoid congestion and collisions. In commercial spaces, good traffic efficiency can also promote user mobility, increase purchase rates, and increase user satisfaction.

1.3 Spatial layout and crowd density

The crowd density of public spaces directly affects users' perception and behavior. A reasonable spatial layout can balance the density of people in different areas, avoid congestion, and improve user comfort. In high-density places such as exhibition halls or transportation hubs, special attention should be paid to spatial layout and streamlined design to ensure the orderly and safe flow of people (Martial Legend, 2022). At the same time, in low-density places such as libraries or research rooms, reasonable planning of spatial layout can provide better privacy and a quiet learning environment.

1.4 Flexibility and versatility design

Modern public spaces often need to adapt to multiple purposes and activities, so flexible and multifunctional design becomes crucial. Through flexible spatial planning and adjustable furniture layout, public spaces can be easily transformed into different functional areas to meet the usage needs in different scenarios. For example, conference rooms can be merged or divided by moving partitions, and the leisure areas of shopping malls can be transformed into temporary performance stages. The design of flexibility and versatility makes public spaces more adaptable and sustainable, better meeting the diverse needs of users.

2. Analysis of the impact of public interior design and spatial layout on user behavior

2.1 The impact of visual perception factors on user behavior

2.1.1 Color psychology

Visual perception factors play an important role in public interior design, directly affecting users' emotions, behaviors, and cognition. Among them, color psychology is a key aspect. Different colors can trigger different emotions and experiences, such as blue often associated with calmness and relaxation, while red is often associated with passion and vitality. In public spaces, clever use of colors can adjust users' psychological state, such as using warm tones to increase purchasing desire in commercial environments or using soft colors in medical institutions to alleviate patients' anxiety.

2.1.2 Lighting and lighting design

Light and lighting design also have a significant impact on user behavior. Factors such as lighting brightness, color temperature, and light source position directly affect users' perception and user experience of space. Reasonable lighting design can create a comfortable atmosphere, and improve users' work efficiency and learning motivation. In commercial spaces, appropriate lighting can highlight the attractiveness of products, attracting customers to stop and make purchases.

2.1.3 Spatial proportion and scale perception

Spatial proportion and scale perception are other important aspects of visual perception. Through appropriate spatial proportions and scales, designers can shape the grandeur or closeness of the space, allowing users to experience different emotions. For example, high ceilings and spacious spaces give public spaces a sense of openness, while low ceilings and compact spaces create an intimate and warm atmosphere. Therefore, considering the importance of spatial proportion and scale perception in public interior design, it can affect users' comfort and emotional experience.
2.2 The impact of auditory perception factors on user behavior

2.2.1 Noise and environmental comfort
Auditory perception factors also play an important role in public interior design, having a profound impact on users' emotions and behaviors. Among them, noise and environmental comfort are key aspects. Excessive noise levels can cause user annoyance and discomfort, affecting work, study, and rest (Lu Wei, 2022). In the workplace, excessive noise may interfere with employees' focus and work efficiency. Therefore, reasonable planning of spatial layout and the use of acoustic design measures such as sound-absorbing materials are important means to reduce the impact of noise. In medical institutions, a quiet environment helps patients with their recovery and treatment process.

2.2.2 Acoustic design and sound insulation effect
Acoustic design and sound insulation also have a significant impact on user behavior. Public spaces often have multifunctional areas, such as in restaurants where the sound of the dining and leisure areas affects each other, which can easily create a sense of noise. Reasonable acoustic design can reduce sound propagation, and improve privacy and focus. In educational institutions, good sound insulation can reduce interference between classrooms and provide a good learning environment. Therefore, through reasonable acoustic design and consideration of sound insulation effects, the environmental quality of public indoor spaces can be improved, creating a more comfortable and focused user experience for users.

2.3 The impact of tactile perception factors on user behavior

2.3.1 Material and texture
The surface texture of different materials will directly affect the user's tactile sensation, such as the smooth marble floor and the soft carpet floor creating a completely different tactile sensation. In public spaces, selecting appropriate materials can create a comfortable, upscale, or warm atmosphere that is in line with the overall design style of the space.

2.3.2 Temperature and humidity regulation
Comfortable temperature and humidity can enhance users' satisfaction with public spaces and increase their stay time here. In offices, commercial venues, or medical institutions, reasonable temperature and humidity regulation can provide a pleasant environment, which is conducive to employee work efficiency, customer consumption experience, and patient rehabilitation.

2.3.3 Interior furniture design and ergonomics
Comfortable and reasonable furniture design can reduce user fatigue and provide a better work, study, and rest experience. The principles of ergonomics are applied to the design of furniture such as chairs and tables to ensure the comfort and health of users during long-term use.

2.4 The impact of other perceived factors on user behavior

2.4.1 Odor and air quality
In addition to visual, auditory, and tactile perception factors, odor and air quality also have an impact on user behavior. Pleasant odors can increase user satisfaction, while unpleasant odors can affect their user experience. Good air quality is crucial for the health and comfort of public spaces, especially in places such as medical institutions and offices that require long-term stays (Yu Liyao, 2019).

2.4.2 Natural elements and plant greening
Natural elements and plant greening can also improve the perception and experience of public spaces. Adding green plants or natural landscapes indoors, such as indoor gardens or murals, can provide a more natural environment, reduce stress and fatigue, and promote users' emotional regulation and relaxation.

3. The impact of public interior design and spatial layout on user behavior

3.1 Multifunctionality and demand balance
Public space usually needs to meet a variety of different functional requirements, for example, the mall needs to
accommodate a variety of activities such as commodity display, shopping, leisure, etc. Balancing the needs of different functions during the design process to ensure that the space can achieve both versatility and meet the specific requirements of each function is a challenge. There may be conflicts between different functions, and designers need to consider them comprehensively and make appropriate compromises.

3.2 Space limitations and streamline optimization

Public spaces are often limited by building structure and spatial size, especially in urban centers or narrow spaces. Achieving smooth pedestrian flow, reasonable functional layout, and comfortable user experience in a limited space is a challenging task. Designers need to cleverly optimize the spatial layout to ensure user mobility and convenience in the space.

3.3 Environmental quality and sustainability

Environmental quality and sustainability have become increasingly important in public interior design. The requirements of users for air quality, lighting, lighting, acoustics, and other aspects are increasingly increasing. Designers need to consider how to provide good environmental quality and ensure the health and comfort of public spaces while minimizing adverse impacts on the environment and achieving sustainable design.

3.4 User needs and cultural background

Public spaces involve the use of different groups of people, and different users have different cultural backgrounds, habits, and needs. In the design process, it is necessary to fully consider the diversity of users to ensure that the design can meet the needs and expectations of different users. Cross-cultural design considerations also involve how to avoid cultural conflict, make public space inclusive and integrate diversity, and create a harmonious environment for sharing.

4. Optimization measures for utilizing public interior design and spatial layout to meet customer needs

4.1 User participation and customized design

User participation and customized design is a method of integrating users into the interior design process. By actively listening to users' opinions and needs, the design is closer to users' personalized preferences and actual usage needs. For example, in hotel room design, designers can communicate face-to-face with customers to understand their preferences for room style, color, furniture configuration, and other aspects, and then customize the room design plan according to customer requirements. This customized design can provide customers with a unique check-in experience, allowing them to feel at home and comfortable in the hotel (Su Jianming & Yuan Meng, 2022). Through user participation and customized design, indoor spaces are no longer created solely by designers, but rather through collaborative efforts with users, better meeting their personalized needs and increasing user satisfaction and loyalty.

4.2 Space streamline optimization

Space streamline optimization is another key measure to meet customer needs. In public interior design, designers need to consider the user's movement path in the space to ensure smoother and more convenient user movement. For example, in the layout of a shopping mall, designers can reasonably plan main channels, guide signs, and intersection nodes to avoid congestion and improve customers' shopping experience. By optimizing the spatial streamline, public spaces can better meet the needs of customers and improve the availability and comfort of the space.

4.3 Environmental comfort and quality assurance

In order to meet the needs of customers for indoor environment comfort, public interior design needs to pay attention to the protection of environmental quality. Reasonably set up ventilation systems and lighting facilities, and choose furniture that conforms to ergonomics to improve the comfort and health of the space. For example, in office design, designers can optimize the lighting layout to ensure that the work area has sufficient natural light to improve employee efficiency and comfort. At the same time, emphasis is placed on acoustic design, using sound-absorbing materials to
reduce noise levels and provide a quieter and more pleasant working environment. By ensuring environmental quality, public spaces can provide a comfortable and pleasant user experience, enhancing customer satisfaction with the space.

4.4 Green and sustainable design

In order to meet customers' requirements for environmental protection and sustainability, public interior design can adopt optimization measures of green and sustainable design. By using environmentally friendly materials and technologies, designers can reduce indoor air pollution, improve air quality, and create a healthy living and working environment. For example, in hotel design, environmentally friendly wall coatings and flooring materials are used to reduce the release of formaldehyde and harmful gases, providing guests with a green and environmentally friendly accommodation experience. At the same time, attention should be paid to energy-saving design, rational utilization of natural light and ventilation, reduction of energy consumption, and achievement of sustainable development. Through green and sustainable design, public spaces not only meet customers' environmental needs but also reflect designers' responsibility and responsibility for the environment and society.

5. Conclusion

In the study of public interior design and spatial layout, we delved into perceptual factors such as vision, hearing, and touch, as well as the impact of spatial layout and functional requirements on user behavior. Through user participation and customized design, optimizing spatial streamline, improving environmental comfort and quality assurance, and advocating green and sustainable design, customers' personalized needs and environmental awareness can be effectively met. Excellent public interior design is not only a perfect combination of aesthetics and functionality but also focuses on user experience and comfort. In future design practices, we should continuously explore and innovate, combining different cultural backgrounds and environmental requirements, to provide more comprehensive and diverse solutions for the design of public spaces. Through continuous optimization of design, we will create more attractive and applicable public spaces for users, promote people's social, learning, work, and leisure activities, and provide a better indoor environment for society.

References


