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Perceptions of Circulation and Spatial Layout Efficiency in Ikeja City Mall: A Survey of User Experience and Satisfaction

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Abstract

This study investigates user perceptions of circulation and spatial layout efficiency at Ikeja City Mall (ICM), one of Lagos' most prominent shopping and entertainment centers. With an emphasis on understanding how these factors influence user satisfaction, a survey was conducted with 100 randomly selected individuals who visited the mall on various days, including during festive seasons. The study adopts a quantitative research design, utilizing structured questionnaires to gather data on key elements such as circulation efficiency, spatial layout, and overall user satisfaction. The findings reveal that 74% of respondents expressed satisfaction with ICM's circulation efficiency, citing wide corridors, clear signage, and the strategic placement of amenities as contributing factors. However, 26% of visitors noted difficulties in navigating congested areas, particularly during peak periods. In terms of spatial layout, 70% of respondents were satisfied with the organization of the mall, appreciating the separation of retail, leisure, and service areas. Nonetheless, 30% of respondents reported congestion in specific zones, especially near the food court and cinema. Overall, 78% of respondents were satisfied with their experience at ICM, although visitors during festive seasons expressed lower satisfaction levels due to overcrowding. The study concludes that while ICM is generally well-planned, there is room for improvement, particularly in managing crowd flow during busy periods. Recommendations include enhancing the wayfinding system, spatially reconfiguring high-traffic areas, and implementing temporary crowd management strategies during festive seasons. These measures could further improve circulation and spatial layout efficiency, ensuring a more seamless user experience.

Keywords: Circulation Efficiency, Crowd Management, Shopping Mall Design, Spatial Layout, User Satisfaction

Introduction

The design of circulation systems and spatial layouts within shopping malls plays a critical role in shaping the overall user experience and satisfaction (Çavka, 2023). In today's fast-evolving urban landscapes, shopping malls are no longer merely centers of commerce (Al-Sulaiti, 2022). They have evolved into multi-functional social spaces where people gather not only for retail activities but also for leisure, entertainment, and social interaction. These spaces, therefore, need to be designed in a manner that ensures a seamless and enjoyable experience for all users. Ikeja City Mall, located in the bustling city of Lagos, Nigeria, stands as a prime example of such a multi-purpose commercial space, attracting thousands of visitors daily. As the city's largest retail complex, its success is tied to how well it serves the needs of diverse user groups—ranging from shoppers and tourists to families and business professionals.

Circulation efficiency in a mall refers to the ease with which users can navigate through the space (Andi et al., 2021). It involves both horizontal and vertical movement, including the use of corridors, walkways, elevators, and escalators (Shrestha & Bajracharya, 2023). The efficiency of these systems influences how easily visitors can find their way between different parts of the mall, locate shops, access food courts, or engage with entertainment zones (Shrestha & Bajracharya, 2023). Inadequate or poorly designed circulation can result in congestion, confusion, and ultimately, frustration for visitors, thereby diminishing their overall satisfaction with the mall experience (Godwana, 2022).

Spatial layout efficiency, on the other hand, focuses on the strategic arrangement of the mall's internal spaces—shops, restaurants, entertainment centers, and service areas—to maximize functionality, accessibility, and visual appeal (Murni et al., 2023). A well-planned spatial layout not only provides ease of navigation but also enhances the aesthetic and commercial value of the mall (Riaz et al., 2024). Proper zoning of different areas, such as retail, dining, and entertainment, ensures that visitors can intuitively locate these sections without undue effort. Furthermore, spatial layout impacts crowd flow and density, both of which influence comfort levels within the space (Ma et al., 2022). An overcrowded or poorly organized layout can lead to bottlenecks in high-traffic areas, reducing the efficiency of circulation and negatively affecting the user experience.

Research has shown that malls with efficient circulation and spatial layouts tend to attract more visitors and achieve higher customer retention rates. User experience is strongly linked to how intuitive and stress-

free navigation is within the space, as well as how well the layout supports a variety of activities (Godwana, 2022). Therefore, understanding users' perceptions of these design elements is crucial for continuous improvement of mall spaces, ensuring they remain appealing, functional, and capable of meeting the evolving needs of users.

This paper aims to explore perceptions of circulation and spatial layout efficiency within Ikeja City Mall from the perspective of its users. By conducting a comprehensive survey of mall visitors, the study seeks to gather insights into how well the mall's circulation systems and spatial arrangements meet their expectations and contribute to their overall satisfaction. It will also seek to identify specific areas where improvements could be made to enhance the functionality and user-friendliness of the space. The findings from this study will be invaluable for architects, urban planners, and mall operators looking to optimize the design and operation of similar retail spaces, both in Nigeria and globally. Given the rapid urbanization of Lagos and other Nigerian cities, this research will provide a crucial understanding of how large retail spaces can be designed or retrofitted to better serve the needs of diverse urban populations.

PROBLEM STATEMENT

Ikeja City Mall (ICM), one of Lagos' most prominent retail and entertainment centers, plays a vital role in shaping the shopping experiences of a diverse urban population. While the mall generally maintains a reputation for modern design and strategic zoning, recurring issues related to congestion and navigability—especially during peak periods—raise concerns about its spatial and circulation efficiency. Research emphasizes that circulation systems in malls must enable smooth navigation and comfort while minimizing crowding (Shrestha & Bajracharya, 2023). Similarly, spatial layout efficiency, which involves the logical organization of zones and amenities, is key to creating intuitive, user-friendly environments (Norazman et al., 2023). Despite a majority of users reporting satisfaction, a significant number cite difficulties navigating specific high-traffic zones such as the food court and cinema during festive seasons. This points to potential limitations in the mall’s capacity to handle fluctuating user densities. Consequently, there is a need to investigate how users perceive and interact with the malls spatial and circulation systems in order to identify areas for improvement and ensure long-term functionality under varying occupancy conditions.

LITERATURE REVIEW

Over the past few decades, scholars have explored various dimensions of circulation systems and spatial organization within malls, seeking to understand how these elements influence the behavior, satisfaction, and overall experience of visitors. This section examines the existing body of knowledge related to circulation and spatial layout efficiency in retail environments, with a particular focus on the following key themes: the

concept of circulation efficiency, the significance of spatial layout in retail environments, user experience in malls, and methods for evaluating circulation and spatial layout.

Circulation Efficiency in Retail Spaces

According to Shrestha & Bajracharya (2023), circulation efficiency refers to how effectively people move through a space, with a focus on minimizing congestion, confusion, and discomfort while maximizing ease of access and wayfinding. Several scholars have emphasized that circulation is one of the most crucial factors in determining a mall's functionality and appeal. According to Vanhaeren et al. (2020), effective circulation design enables smooth flow of people by guiding their movements through clear pathways, well-marked routes, and unobstructed access to key areas such as retail stores, restrooms, and food courts. Weisman's theory of wayfinding posits that clear signage, landmarks, and logical layouts contribute significantly to user navigation, especially in large, complex environments like shopping malls (Ahmed et al, 2020).

Additional studies have investigated the relationship between circulation systems and user behavior. Karakas & Yildiz (2020) highlights how human spatial cognition plays a role in determining how people interact with built environments. In retail contexts, poor circulation systems can result in confusion and frustration, leading to a negative shopping experience. Conversely, well-designed circulation enhances visitors' ability to explore the mall and access various services, promoting positive user experiences and increased time spent within the space. Montello's work emphasizes that effective circulation design reduces decision points, minimizes unnecessary detours, and facilitates a direct connection between different zones within the mall.

A significant body of literature also underscores the relationship between circulation efficiency and economic performance. According to Töppig & Moital (2020), efficient circulation systems directly impact sales, as easier navigation results in increased visitor flow to different retail outlets. Retail zones that are more accessible tend to attract higher foot traffic, increasing the likelihood of purchases. This relationship between circulation and consumer behavior has been corroborated by several empirical studies, which show that shoppers are more likely to engage in unplanned purchases when circulation is smooth and intuitive (Larson et al., 2005).

Spatial Layout Efficiency in Malls

Spatial layout efficiency refers to the strategic arrangement of spaces within a mall, ensuring optimal placement of retail stores, service areas, and communal zones. Scholars have long recognized the importance of spatial layout in enhancing the functionality and overall appeal of retail spaces. Adjei et al., (2024) identifies spatial layout as a determinant of consumer behavior, as well as a key factor influencing the visual and operational coherence of a mall. Furthermore, another author (Zhou & Liu, 2021) argues that spatially

coherent malls—those in which retail zones, circulation routes, and amenities are logically organized—tend to promote higher levels of consumer satisfaction and engagement.

Spatial layout also plays a significant role in defining the atmosphere and identity of a mall. Wahba et al. (2020) discuss the concept of the "mall as place" and argue that the spatial arrangement of retail and leisure zones significantly affects the ambiance of a shopping center. Malls that effectively zone their spaces according to user needs—such as creating distinct areas for entertainment, dining, and shopping—create environments that are not only functional but also emotionally appealing. This enhances the overall visitor experience by offering a variety of activities within a well-organized setting.

Additionally, the literature discusses the influence of spatial layout on user comfort. Tullio-Pow et al. (2021) highlights that poorly designed spatial layouts can lead to feelings of disorientation and discomfort, particularly in larger malls where wayfinding becomes more complex. The zoning of spaces, the placement of vertical circulation elements (such as escalators and elevators), and the proximity of service areas all contribute to user comfort and convenience. Studies show that shoppers prefer malls where they can easily locate amenities, stores, and exits without unnecessary detours or excessive walking distances (Buwa, 2020).

User Experience and Satisfaction in Retail Spaces

User experience (UX) in retail spaces encompasses the emotional, physical, and cognitive responses of individuals to their environment. According to Briedis et al. (2020), user experience is central to the success of any retail environment, as it affects customer satisfaction, loyalty, and the overall appeal of the space. In shopping malls, user experience is shaped by several factors, including circulation efficiency, spatial layout, ambiance, and the availability of amenities.

Scholars have widely acknowledged the role of circulation and spatial layout in shaping the user experience in malls. According to Ceylan & Alomari (2024), effective retail environments engage customers through "atmospherics"—the combination of physical design elements that influence consumer behavior and perception. These elements include lighting, color schemes, and spatial arrangements, all of which contribute to the overall ambiance of a space. In malls, the authors emphasizes that spatial layout and circulation systems form the backbone of the shopper’s experience, as they determine how easily users can navigate and interact with the environment.

Recent research by Underhill et al. (2000) emphasizes the importance of studying customer movement patterns to optimize circulation systems. Underhill’s work suggests that analyzing foot traffic within malls can reveal important insights into user preferences, helping designers improve circulation paths, wayfinding systems, and the placement of key amenities. His studies show that malls with efficient circulation systems and well-organized layouts tend to elicit more positive emotional responses from visitors, resulting in higher satisfaction rates and greater visitor loyalty.

Methods of Evaluating Circulation and Spatial Layout Efficiency

The assessment of circulation and spatial layout efficiency in retail environments has been approached through various methodologies, including observational studies, user surveys, and simulation models. One common method is the use of space syntax analysis, which quantifies spatial configurations and analyzes how they impact human movement and behavior. Batty (2022) explained space syntax as a tool to study the relationship between spatial layout and user interaction, making it a valuable tool for analyzing circulation and layout efficiency in malls. This method helps identify high-traffic areas, bottlenecks, and zones that may be underutilized due to poor layout design.

Survey-based methods are another widely used approach for evaluating user perceptions of circulation and layout efficiency. Surveys allow researchers to collect direct feedback from mall visitors regarding their experiences, preferences, and satisfaction with circulation systems and spatial organization. Berni & Borgianni (2021) argue that surveys provide a more holistic understanding of user experience, as they capture subjective insights that may not be evident through observational methods alone.

Simulation modeling is also increasingly used to assess circulation efficiency in large-scale retail environments (Yang et al., 2020). Computer-based simulations allow designers to model foot traffic patterns, evaluate potential congestion points, and test different spatial configurations before construction or renovation. These models can be particularly useful in optimizing circulation flow, predicting user behavior, and making data-driven design decisions (Ko et al., 2023).

GAPS IN LITERATURE

Although several studies have examined the relationship between circulation, spatial layout, and user satisfaction in shopping malls, there is limited empirical research focusing on user perceptions within Nigerian urban retail environments. Much of the existing literature relies on theoretical frameworks, simulation models, or case studies from non-African contexts, leaving a gap in localized assessments (Yuan et al., 2021). Furthermore, while previous research acknowledges the importance of wayfinding and congestion control, it often overlooks how seasonal crowd surges—common in commercial hubs like Ikeja impact users' experiences (Vanhaeren et al., 2020). Emotional and cognitive responses to spatial disorientation and overcrowding are also underrepresented in these studies (Tullio-Pow et al., 2021). These gaps indicate the need for a user-centered, context-specific investigation into how circulation and spatial layout design affect satisfaction and usability in Nigerian malls.

METHODOLOGY

The study adopts a quantitative research design, using a survey-based approach to gather data from respondents. This design is appropriate for measuring user perceptions and satisfaction levels, as it allows for the collection of quantifiable data that can be

statistically analyzed. The research aims to identify key trends and patterns in the experiences of mall visitors, particularly concerning the ease of navigation, spatial layout efficiency, and overall satisfaction with the mall's design.

The target population for this study consisted of individuals who have visited Ikeja City Mall, one of Lagos' most prominent shopping and entertainment centers. Due to the large and diverse number of visitors who frequent the mall, it was essential to select a representative sample to ensure the findings are generalizable to the broader population of mall users. Data collectors approached every third individual or group exiting or entering the mall at designated entry points across various time periods during weekdays and weekends. Individuals were selected if they had spent at least 30 minutes in the mall and were aged 18 or older. Respondents who had not visited the mall within the last three months or were below 18 years of age were excluded from the study. A sample size of 100 respondents was used for this study. The sample consisted of randomly selected individuals who have visited Ikeja City Mall at least once. To capture a variety of experiences, the sample included visitors who have been to the mall on regular days as well as during busy festive seasons. Random sampling ensured that each visitor has an equal chance of being selected, which reduces bias and enhances the reliability of the findings.

To ensure the reliability and validity of the instrument, the questionnaire was pre-tested with a pilot group of 10 mall visitors who met the inclusion criteria. Feedback from the pilot test was used to revise ambiguous questions and improve clarity.

The primary data collection instrument for this study was a structured questionnaire. The questionnaire consisted of both closed-ended and Likert-scale questions, designed to measure respondents' perceptions of the mall's circulation efficiency, spatial layout, and overall satisfaction. The questions were grouped into sections that focus on specific aspects of the user experience:

i. Circulation Efficiency: Questions related to ease of navigation, signage, and the clarity of routes between key areas such as retail stores, restrooms, and food courts.
ii. Spatial Layout Efficiency: Questions addressing the organization of spaces, proximity of key areas, and the balance between retail, leisure, and service zones.
iii. User Satisfaction: General satisfaction with the mall's design, ease of use, and how the spatial organization supports user needs.

The questionnaire was distributed in person to visitors at the mall, ensuring that respondents were current or recent users of the space.

Data collection was conducted over a period of three weeks. To capture a range of experiences, surveys will be administered on both weekdays and weekends, as well as during peak times associated with festive seasons. This strategy ensured that the data reflects the varying user traffic patterns and crowd dynamics that occur during different

times of the year. All participants in the study were informed of the purpose of the research and assured that their responses will remain anonymous and participation was voluntary. Ethical approval was obtained from Caleb University's Research Ethics Committee, and informed consent and anonymity were maintained throughout the study.

FINDINGS AND DISCUSSIONS

This section presents the findings from the survey conducted at Ikeja City Mall (ICM) and provides a detailed discussion of the results. The data gathered from 100 respondents, who visited the mall on different days and during festive seasons, is analyzed to explore their perceptions of circulation and spatial layout efficiency, as well as their overall satisfaction with the mall. The discussion also examines areas where ICM excels and areas where improvements could enhance user experience further.

Findings

Circulation Efficiency

The survey results indicate that the majority of respondents (74%) expressed satisfaction with the circulation efficiency within ICM. They noted that the mall's wide corridors, clear signage, and strategic placement of stores and amenities contributed to a generally smooth flow of foot traffic. A significant proportion of respondents (68%) found the main pathways easy to navigate and appreciated the intuitive layout of key points such as entrances, exits, and escalators.

However, 26% of respondents highlighted certain issues with circulation, particularly during peak periods such as weekends and festive seasons. Crowding in high-traffic areas, especially near escalators, food courts, and popular retail stores, was cited as a recurring issue. Some visitors also reported that the signage, while generally adequate, could be more visible or updated to accommodate new stores and services.

Spatial Layout Efficiency

Respondents' perceptions of the mall's spatial layout were largely positive. Over 70% of visitors were satisfied with the organization of retail, leisure, and service areas. The separation of retail stores from entertainment and dining zones was appreciated, as it allowed visitors to move through the mall without excessive noise or congestion from entertainment areas. The open layout of the central atrium, in particular, received favorable reviews, with many respondents commenting on its welcoming and spacious feel.

Nevertheless, 30% of respondents noted that certain parts of the mall, especially near the food court and cinema, became congested during busy times. These areas often experienced bottlenecks, where the flow of people became restricted due to a concentration of activities and limited space. Additionally, several respondents felt that

the distribution of stores could be improved, with some sections appearing less accessible or out of the main circulation flow.

User Satisfaction

Overall user satisfaction with the mall's circulation and spatial layout was high, with 78% of respondents reporting that they were satisfied with their experience at ICM. Many respondents appreciated the mall's cleanliness, modern design, and the ease of locating key amenities such as restrooms and customer service desks. However, 22% expressed some level of dissatisfaction, citing issues related to overcrowding during festive seasons, as well as difficulties navigating certain areas where the flow of people was not as smooth. Interestingly, many respondents who visited the mall during festive periods reported lower levels of satisfaction compared to those who visited during regular days. The crowd density during peak times was a significant factor in these responses, suggesting that while ICM's circulation and spatial layout are generally well designed, they may struggle to cope with the increased foot traffic during holidays and special events.

Discussions

The findings from this study reveal that Ikeja City Mall (ICM) is largely well planned in terms of circulation and spatial layout efficiency, with a majority of visitors expressing satisfaction with their experience. However, despite the mall's strong performance in key areas, the data also highlight several opportunities for improvement, particularly in relation to handling peak traffic and improving the overall flow of movement during busier times.

Strengths of ICM's Circulation System

ICM's circulation system is one of its key strengths. The layout of the mall provides clear and wide corridors that facilitate easy movement between stores, leisure areas, and service zones. The use of vertical circulation elements such as escalators and elevators is strategically placed to ensure ease of access to different floors. Visitors' positive responses to the mall's signage and overall navigability demonstrate that ICM has succeeded in creating an environment where visitors can easily find their way around without confusion.

This well-thought-out circulation system plays a crucial role in enhancing the shopping experience at ICM. By reducing confusion and ensuring that people can move freely between different areas of the mall, the circulation design helps visitors engage more fully with the retail offerings and services. In line with findings from the literature, efficient circulation promotes higher levels of user satisfaction and increases the likelihood of unplanned purchases (Wu, Chiu & Chen, 2020; Redine, Deshpande, Jebarajakirthy & Surachartkumtonkun, 2023).

Spatial Layout Efficiency and User Experience

The spatial layout of ICM, particularly the clear zoning of retail, dining, and leisure areas, was highly appreciated by most visitors. The mall's design separates different activities effectively, allowing visitors to enjoy specific areas without interference from other functions. For instance, the central atrium serves as a focal point for orientation and enhances the overall aesthetic appeal of the mall, creating an inviting and spacious environment. The balance between retail and leisure spaces also contributes to the mall's functionality, offering a diverse range of experiences that cater to different visitor needs.

However, the issue of congestion in certain high-traffic areas points to a potential weakness in the spatial organization of some zones. As identified by respondents, areas near the food court and cinema tend to become congested during peak periods, leading to bottlenecks and restricting movement. This is consistent with studies that emphasize the importance of spatial coherence and the avoidance of overcrowded zones in retail environments (Töppig & Moital, 2020; Vanhaeren, De Cock, Lapon, Van de Weghe, Ooms & De Maeyer, 2020). It suggests that while ICM's spatial layout is generally effective, it could benefit from rethinking how high-traffic areas are managed, particularly during busy seasons.

Challenges During Peak Periods

One of the most prominent challenges identified in the findings relates to the mall's ability to handle increased foot traffic during festive seasons. While the mall functions well on regular days, the crowd density during festive periods often leads to congestion, particularly in popular areas like the cinema and entrances. These findings align with previous research, which suggests that circulation systems and spatial layouts that perform well under normal conditions may struggle when exposed to peak usage (Kim & Penn, 2004).

To address this challenge, ICM could consider implementing strategies to improve the flow of people during high-traffic periods. For instance, crowd management techniques such as improved wayfinding systems, temporary redirection of traffic, or the use of mobile apps to guide visitors could help alleviate some of the congestion. Additionally, expanding or reconfiguring key high-traffic areas, such as widening corridors near the food court or introducing additional seating in waiting areas, could improve visitor comfort during busy periods.

Recommendations for Improvement

While ICM is generally well planned, the findings suggest that there is room for improvement in the following areas:

i. Enhancing Wayfinding and Signage
ii. Managing High-Traffic Zones
iii. Improving Festive Season Traffic Management

Conclusively, the findings from this study indicate that while Ikeja City Mall performs well in terms of circulation and spatial layout efficiency, there are several areas where improvements could enhance the user experience, particularly during peak traffic periods.

CONCLUSION

This study concludes that Ikeja City Mall is largely effective in its spatial organization and circulation systems under normal usage conditions. The majority of users appreciate the mall's wide corridors, clear signage, and zoning strategy that separates retail, leisure, and service areas. However, issues such as congestion in high-traffic areas during festive seasons and difficulty navigating crowded zones suggest limitations in the current layout's ability to accommodate surges in foot traffic. While the mall succeeds in meeting general expectations, it falls short of ensuring consistent user comfort and functionality during peak periods. Addressing these issues is essential to maintaining a high standard of user satisfaction and operational efficiency.

RECOMMENDATIONS

1. Enhance Wayfinding Systems: Improve the visibility and frequency of signage, and incorporate digital solutions such as interactive kiosks or mobile navigation apps to support user orientation.
2. Redesign Congested Zones: Reconfigure high-traffic areas like the food court and cinema with wider walkways, expanded seating, or redistributed access points to minimize bottlenecks.
3. Implement Peak-Season Management Strategies: During festive seasons, adopt temporary measures such as staggered entry points, extended operating hours, or the deployment of trained personnel to guide foot traffic.
4. Conduct Regular Post-Occupancy Evaluations: Periodically collect user feedback and monitor traffic patterns to identify recurring issues and guide adaptive spatial planning and operational decisions.

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