Journal of Science Research and Reviews
PRINT ISSN: 1595-9074
E-ISSN: 1595-8329
DOI: https://doi.org/10.70882/josrar.2026.v3i3.214
Homepage: https://josrar.esrgngr.org
Original Research Article

Assessment of the Functional Nature of Contemporary City Malls in Nigeria

[1]Olawale, Sunday F., *[2]Morakinyo, Kolawole Opeyemi, [1]Adedayo, Olatunde F., [1]Alonge, Tope S., [1]Adebambo, Oluwatimilehin I., [1]Farodoye, Seyi O. and [1]Mustapha, Abdulrasheed

[1]Department of Architecture, Joseph Ayo Babalola University, Ikeji-Arakeji, Osun State Nigeria.
[2]Department of Architectural Technology, Federal Polytechnic Ile-Oluji, Ondo State, Nigeria.
*Corresponding Author's email: kwwlemorakinyo@gmail.com

KEYWORDS
Accessibility,
Functional Efficiency,
Nigeria,
Shopping Malls,
Universal Design,
Wayfinding.

ABSTRACT
Shopping malls in Nigeria have evolved from basic retail facilities into multifunctional urban complexes that accommodate shopping, entertainment, recreation, and social interaction. Despite this transformation, concerns remain regarding their functional efficiency, accessibility, and spatial performance. This study assesses the functional performance of contemporary city malls in Nigeria with emphasis on spatial configuration, wayfinding, accessibility, atrium design, and urban integration. A mixed-method research approach was adopted using case studies, observational checklists, questionnaire surveys, and space syntax analysis. Twelve shopping malls across Lagos, Abuja, and Ogun State were examined, while five malls were selected for detailed appraisal. Findings reveal that although most malls effectively provide retail and recreational functions, major deficiencies exist in accessibility provisions, wayfinding systems, and integration with public transportation networks. Linear floor plan configurations demonstrated superior intelligibility and ease of navigation compared with racetrack layouts. Only 26% of the malls examined provided both Braille signage and audio guidance systems, while none provided designated parking spaces for persons with disabilities. The study concludes that functional mall design requires early integration of universal design principles, efficient spatial planning, and effective wayfinding strategies. The paper recommends the adoption of inclusive design standards, improved fire safety systems, enhanced public transport integration, and better regulatory enforcement to ensure that shopping malls adequately serve all categories of users.

CITATION
Olawale, S. F., Morakinyo, K. O., Adedayo, O. F., Alonge, T. S., Adebambo, O. I., Farodoye, S. O., & Mustapha, A. (2026). Assessment of the Functional Nature of Contemporary City Malls in Nigeria. *Journal of Science Research and Reviews*, *3*(3), 61-72. https://doi.org/10.70882/josrar.2026.v3i3.214.

INTRODUCTION

The development of shopping malls in Nigeria has increased significantly over the past two decades. Prior to 2005, only a limited number of shopping centres existed in the country, most of which were relatively small in scale. However, by 2019, Nigeria had recorded more than eighteen shopping centres exceeding 3,048 square metres in floor area (Adebayo & Ogunleye, 2023). Landmark developments such as Ikeja City Mall and The Palms Mall introduced a modern retail culture characterized by centralized shopping, entertainment, and leisure facilities under one roof.

Historically, the informal retail sector has constituted a major component of Nigeria's economy. Recent studies estimate that the informal economy contributes between 50% and 65% of the national Gross Domestic Product

(Okonkwo & Eze, 2022). Consequently, the emergence of formal shopping malls has altered the dynamics of urban retail by introducing structured commercial environments that compete directly with traditional markets and informal businesses. Contemporary shopping malls are no longer limited to retail activities alone. They now function as social and recreational centres where individuals gather for leisure, dining, entertainment, and communal interaction. Adewale and Ogunba (2024) described shopping malls as "urban anchors" because of their ability to influence patterns of urban growth and social activity. In many developing economies, malls increasingly shape urban lifestyles and consumption behaviour (Chen & Wang, 2023).

The efficiency of shopping malls largely depends on their spatial organization and the ease with which users can navigate them. Wayfinding, which refers to the process of orienting oneself and navigating within an environment, is an essential determinant of user satisfaction (Hassan & Mohamed, 2023). Poor wayfinding systems often result in confusion, frustration, and reduced patronage. Accessibility is another critical issue in shopping mall design. Although Nigeria enacted the Discrimination Against Persons with Disabilities (Prohibition) Act in 2018, many public buildings still fail to comply with universal design standards (Federal Ministry of Justice, 2021). Oluwole and Adeyemi (2025) observed that several Nigerian shopping malls lack accessible parking spaces, tactile signage, and adequate circulation facilities for persons with disabilities.

The atrium remains one of the defining features of modern shopping malls. Apart from enhancing daylight penetration, atriums improve spatial orientation, create visual connectivity between floors, and serve as landmarks for navigation (Hosseini et al., 2024). The arrangement of elevators and escalators within the atrium also influences circulation efficiency and visual integration. This study therefore assesses the functional performance of contemporary shopping malls in Nigeria by examining their spatial configuration, accessibility features, wayfinding systems, atrium design, and urban integration. The findings are expected to contribute to improved architectural practice and more inclusive mall developments in Nigeria.

Literature Review

Shopping Malls as a Building Type

Shopping malls are integrated commercial developments designed, owned, and managed as unified entities (Adedeji & Ogunba, 2022). Beyond retailing, contemporary malls incorporate cinemas, restaurants, recreational spaces, banking halls, and entertainment facilities. Borysenko (2025) classified shopping malls into three spatial typologies:

1. *Introverted malls* – inward-looking developments that prioritize enclosed circulation and internal activities.
2. *Integrated malls* – developments that maintain strong relationships with surrounding streets and urban spaces.
3. *Thematic malls* – malls designed around a specific cultural or experiential theme.

Most Nigerian malls exhibit introverted or integrated characteristics, while thematic malls remain uncommon (Okpara & Nwachukwu, 2023). The recreational communication space (RCS) is the main structure-forming element of a shopping mall (Borysenko, 2025). The RCS is the pedestrian space that connects all parts of the mall. The way the RCS is designed affects how people move through the mall and how they feel about the space (Zhang & Liu, 2024).

Wayfinding in Shopping Malls

Wayfinding refers to the cognitive and behavioural processes involved in navigating built environments. According to Akinwumi and Ogunbiyi (2023), effective wayfinding depends on clear spatial organization, signage systems, landmarks, and visual accessibility. Aigbe, et al (2024) employed Visibility Graph Analysis to study wayfinding in selected Abuja shopping malls and found that linear layouts offered significantly higher intelligibility than racetrack configurations. Their findings demonstrated that users experienced less confusion in malls with simpler circulation systems and stronger visual connectivity.

Wayfinding is a complex problem-solving activity that requires mental effort (Akinwumi & Ogunbiyi, 2023). The term was first used by Lynch in his classic work on city image, and subsequent researchers have built upon this foundation (Olagunju & Adebayo, 2022). Three types of wayfinding behaviour have been identified (Eze & Okoro, 2024). Searching behaviour is when people look around to find clues. Stopping behaviour is when people pause to think about where to go. Help-seeking behaviour is when people ask others for directions. When a mall is hard to understand, people stop more often and ask for help more often.

Aigbe, Maina and Sagada (2024) studied wayfinding in three Abuja shopping malls. They used a method called Visibility Graph Analysis to measure how easy the floor plans were to understand. They found that linear floor plans (like a straight line) were much easier to understand than racetrack floor plans (where the path goes in a loop). Silverbird Entertainment Centre had the most understandable layout, while Jabi Lake Mall had the least understandable layout. People use three main things to find their way: physical features (like landmarks), coded information (like signs), and social practices (asking for directions). Most people prefer to use signs first, then

landmarks, and only ask for help if needed (Aigbe, Maina & Sagada, 2024).

Universal Design and Accessibility

Universal design advocates the creation of environments usable by all individuals regardless of age or physical ability. The World Health Organization (2023) identified seven principles of universal design, including equitable use, flexibility, intuitive operation, perceptible information, and tolerance for error. Research by Oluwole and Adeyemi (2025) revealed that many Nigerian shopping malls inadequately implement these principles. Common deficiencies include absence of accessible parking spaces, inadequate ramps, slippery floor surfaces, and poor signage systems.

MATERIALS AND METHODS

A mixed-method research approach was adopted for this study. Data collection methods included case studies, direct observation, questionnaire surveys, and space syntax analysis. Twelve shopping malls located in Lagos, Abuja, and Ogun State were examined, while five malls were selected for detailed analysis as shown in Table 1 Selection criteria included geographical distribution, size, and popularity. Both large and medium-sized shopping malls were chosen from each location so as to make generalizations that extend across all the cases. The appraisal of existing mall development was carried out to evaluate by practical visitation to the site. This was done in order to gain insight of the subject matter as already applied to life situations and in order to examine the merits and shortcomings of the malls, especially on technical issues relating to the dynamics of spatial layout, wayfinding, and accessibility.

Table 1: Showing the list of shopping malls examined in this study, including whether each mall has an atrium

S/N	Shopping mall	Location	Year Built	Floor Area (m^2)	Atrium Present
1	Ikeja City Mall	Ikeja, Lagos State	2011	23,000	Yes
2	Jabi Lake Mall	Abuja, FCT	2015	26,479	Yes
3	The Palms Mall	Ota, Ogun State	2016	14,500	Yes
4	Novare Central Mall	Abuja, FCT	–	12,466	No
5	Silverbird Entertainment Centre	Abuja, FCT	–	33,000	Yes

Source: Oluwole & Adeyemi (2025); Aigbe, Maina & Sagada (2024)

Observational Checklist

An observational checklist was developed based on the seven principles of universal design (World Health Organization, 2023), to evaluate fourteen architectural features including: *car parks, walkways, handrails, stairs, ramps, floor surfaces, entrances, waiting areas, doors, corridors, elevators, escalators, toilets, and signage systems*. Each feature was rated as satisfactory, moderate, or inadequate (Oluwole & Adeyemi, 2025).

Questionnaire Survey

A total of 150 questionnaires were administered to mall users both physically and electronically. The survey examined users' experiences regarding accessibility, wayfinding, spatial comfort, and overall satisfaction.

Space Syntax Analysis

Visibility Graph Analysis was conducted using DepthmapX software to assess spatial intelligibility, connectivity, and visual integration within the selected malls.

RESULTS AND DISCUSSION

Nature of Building

Building morphology particularly height and spatial depth plays a critical role in determining daylight penetration and the effectiveness of wayfinding within shopping malls. The findings indicate that most contemporary malls are multi-storey structures, with the sampled cases ranging from one to four floors. Specifically, 60% of the malls studied comprised three or more levels, while the remaining 40% had two floors or fewer. This variation in vertical scale has implications for both visual connectivity and user navigation.

Spatial depth emerged as a key determinant of wayfinding efficiency. In deeper layouts, where the terminal point is not visible from the entrance, users experience increased difficulty in orientation and decision-making. By contrast, linear floor configurations typically present reduced depth, enabling clearer sightlines from entry points to destination areas. Conversely, racetrack layouts characterized by looping circulation paths tend to increase spatial depth and consequently complicate navigational clarity (Aigbe, Maina & Sagada, 2024). A prominent architectural feature observed in the majority of the case studies is the central atrium. Defined as a multi-storey open space, often capped with a glazed roof or skylight, the atrium facilitates the penetration of natural daylight into interior zones. The study revealed that 80% of the malls (4 out of 5) incorporated a clearly defined central atrium, while 20% lacked this feature. The atrium performs multiple functional and experiential roles within the mall environment. First, it enhances daylight distribution, thereby reducing reliance on artificial lighting during daytime hours. Second, it establishes visual connections

across different levels, enabling users to perceive destinations and circulation routes more intuitively. Third, it contributes to a perception of openness and spatial relief, mitigating feelings of congestion. Additionally, atria often function as social and commercial nodes, accommodating events, exhibitions, and promotional activities. Importantly, they also serve as key landmarks, aiding spatial orientation and reinforcing cognitive mapping (Hosseini, Yeganeh & Jalali, 2024). The configuration of vertical circulation elements such as escalators and elevators within the atrium significantly influences its effectiveness. When centrally positioned, these elements may obstruct sightlines and introduce visual clutter, thereby diminishing spatial legibility. In contrast, peripheral placement preserves visual continuity and enhances accessibility to retail units. Empirical observations further indicate a strong correlation between atrium design quality and user satisfaction. Malls featuring well-articulated atria reported higher levels of user comfort and navigational ease, with respondents indicating minimal difficulty in locating destinations or retracing routes. Conversely, malls lacking clearly defined atria, or those with poorly configured atrial spaces, exhibited higher incidences of wayfinding challenges and reduced overall user satisfaction.

Figure 1: illustrates a typical example of a three-storey shopping mall (Ikeja City Mall, Lagos), highlighting the integration of vertical scale and central spatial organization

Figure 2: illustrates the interior of a shopping mall characterized by substantial daylight penetration through window openings and a skylight system (Source: bdcmagazine.co.uk).

Figure 2 above demonstrates how the integration of glazed façades and overhead skylights enhances natural illumination within the mall environment. This design approach not only improves visual comfort but also reinforces spatial legibility by increasing visibility across circulation routes and retail spaces. The resulting brightness and openness contribute to a more inviting atmosphere, while simultaneously supporting wayfinding by allowing users to better perceive spatial organization and key architectural features.

Spatial Layout and Wayfinding

The findings indicate that linear floor plan configurations significantly enhance spatial intelligibility when compared to racetrack layouts. Silverbird Entertainment Centre exhibited the highest level of intelligibility (R^2 = 0.860606), suggesting that approximately 86% of its spatial configuration is easily comprehensible, thereby facilitating efficient wayfinding. In contrast, Jabi Lake Mall recorded the lowest intelligibility (R^2 = 0.334997), indicating that only about 33% of its layout is readily understandable, which contributes to increased navigational difficulty (Aigbe, Maina & Sagada, 2024). User survey responses corroborate these spatial analysis results. At Jabi Lake Mall, 34.1% of respondents reported rarely experiencing disorientation, whereas at Silverbird Entertainment Centre, 46.7% of respondents reported rarely getting lost and an equal proportion indicated that they never experienced disorientation. Furthermore, a higher proportion of users at Jabi Lake Mall (27.6%) identified areas of confusion within the mall, compared to Silverbird Entertainment Centre, where 33.3% of respondents reported no confusing areas. Additionally, the presence of a central atrium emerged as a critical factor influencing wayfinding performance. Malls incorporating atrium spaces demonstrated improved user orientation, as shoppers frequently relied on the atrium as a spatial reference point. Conversely, malls lacking such features were associated with increased difficulty in spatial orientation and navigation.

Vertical Access Elements and Visual Richness

The findings of Hosseini, Yeganeh and Jalali (2024) were contextualized within Nigerian shopping mall environments. The study underscores that the spatial configuration of elevators and escalators within atrium spaces plays a critical role in enhancing visual richness and facilitating access to retail units. Specifically, the optimal arrangement identified involves positioning escalators centrally within the atrium at approximately a 30-degree angle relative to the main entrance axis, while locating elevators separately. However, empirical observations from the Nigerian case studies revealed a complete absence of this optimal configuration, with a 0% compliance rate. Instead, vertical circulation elements were frequently arranged without adequate consideration for their impact on visual integration and spatial accessibility.

Furthermore, the digression index analytical framework proposed in the same study proved effective for assessing configuration performance. Results indicate that layouts in which elevators are spatially separated from escalators demonstrate superior outcomes, achieving up to 98% efficiency in step depth analysis. Such configurations are characterized by reduced average depth between the main entrance and retail destinations, thereby improving navigability. Additionally, higher integration index values observed in these layouts suggest an increased presence of accessible public spaces, enhancing their suitability for social interaction and congregation within the atrium environment.

Use of Courtyards and atriums

The findings indicate that courtyards serve as an effective architectural strategy for increasing the availability of windows within a building, thereby enhancing natural lighting and ventilation. Similarly, atriums in shopping malls contribute significantly to both spatial orientation and daylight penetration. By providing a visually accessible central space, atriums function as key reference points that enable users to easily understand their location within the mall. Figure 3 illustrates the distribution of courtyards and atriums across the sampled malls. The results show that 20% of the malls incorporate courtyards, while a larger proportion, 80%, feature central atriums. Conversely, 80% of the malls lack courtyards, and 20% do not include central atriums. Furthermore, malls that incorporate either courtyards or atriums demonstrate improved wayfinding performance. These architectural elements act as prominent spatial landmarks, facilitating navigation and enhancing users' overall spatial awareness within the shopping environment.

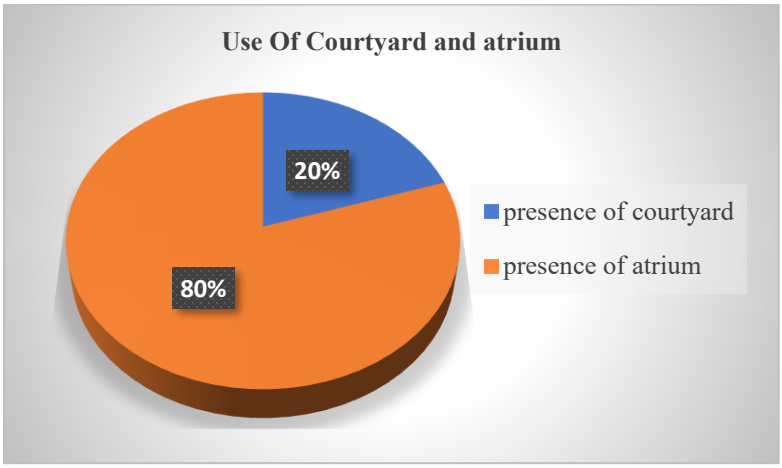

Figure 3: Chart showing percentage of malls with courtyard and atrium
Source: Authors' Field Survey, 2026

Window Placement and Orientation

Window placement and building orientation are critical determinants of daylight availability and visual comfort within interior spaces. The orientation of windows significantly influences both the quality and consistency of natural light admitted into a building. North-facing windows primarily receive diffuse skylight, which provides uniform and stable illumination throughout the day. In contrast, south-, east-, and west-facing windows admit direct sunlight, resulting in variable light intensities due to the sun's movement across the sky (Hosseini, Yeganeh & Jalali, 2024). Findings from the case studies indicate that a majority of the malls (67%) demonstrated adequate consideration for daylighting through appropriate building orientation, thereby enhancing visual comfort and supporting task performance. However, 33% of the malls exhibited poor orientation, which resulted in insufficient daylight penetration.

Furthermore, the study revealed a strong consensus among respondents regarding the importance of window placement. Approximately 82% of respondents agreed that proper positioning of windows significantly influences

the quantity and quality of daylight within interior spaces, ultimately determining the availability of useful daylight (Hassan & Mohamed, 2023). Effective window placement, when aligned with building orientation, enhances daylight distribution and reduces reliance on artificial lighting. To maximize daylight penetration, the strategic positioning of windows is essential. The findings showed that 58% of the malls prioritized daylighting in atrium and circulation spaces by incorporating windows on at least two sides of the building envelope. This approach facilitates balanced light distribution and minimizes glare.

Additionally, the placement of openings on multiple facades was identified as a key strategy for improving daylight uniformity. This was achieved in 60% of the malls studied, while the remaining 40% utilized courtyard designs to enhance daylight access. Courtyards increase the availability of window openings and allow light to penetrate deeper into interior spaces. The use of atriums with glazed skylights was also observed as an effective strategy for introducing daylight into the central areas of large malls. Atriums were perceived as a cost-effective architectural solution for daylighting, as they enable natural light to reach otherwise inaccessible interior zones. Similarly, courtyards were recognized as an economical means of improving daylight distribution by increasing façade exposure and facilitating additional window placement.

Overall, the findings emphasize that both window placement and building orientation are fundamental to achieving optimal daylighting performance. Integrating these design strategies can significantly enhance visual comfort, energy efficiency, and the overall indoor environmental quality of commercial buildings.

Shading Devices

Shading plays a critical role in achieving effective daylighting performance, as it regulates the quantity of daylight entering interior spaces while mitigating glare. Various shading devices are employed in buildings, including awnings, blinds, canopies, shutters, and both horizontal and vertical projection systems (Hosseini, Yeganeh & Jalali, 2024).

The findings (Figure 4) indicate a varied adoption of shading strategies across the studied shopping malls. Horizontal projected shading devices were the most prevalent (35%), followed by combined vertical and horizontal systems (30%), vertical projected devices (20%), and blinds (10%). A small proportion (5%) of the malls had no shading devices. Notably, 95% of the shading systems in use were found to admit adequate daylight into interior spaces. Field observations further revealed that shading devices in shopping malls are typically left open throughout the day, suggesting a preference for maximizing daylight penetration.

The results also demonstrate that both direct sunlight and high-intensity diffuse light tend to illuminate only areas adjacent to windows, indicating limited daylight penetration depth. In such cases, external shading devices appear to have minimal influence on the spatial distribution of daylight. Nevertheless, these devices are effective in reducing solar radiation, thereby supporting adequate daylighting conditions while enhancing thermal comfort (Hosseini, Yeganeh & Jalali, 2024). To mitigate the adverse effects of excessive solar gain, both external and internal shading systems are incorporated into building design to limit solar penetration, particularly when outdoor temperatures exceed thermal comfort thresholds. A majority of respondents (65%) confirmed that shading devices contribute to reducing solar heat gain, thereby lowering indoor heat accumulation (Hassan & Mohamed, 2023).

However, the findings also reveal some inconsistencies in performance. In 40% of the case studies, daylight distribution remained concentrated near window areas, with minimal improvement from external shading devices. Additionally, 35% of the cases indicated that shading systems reduced overall daylight distribution, potentially compromising interior illumination levels. This perception was supported by 28% of respondents, who noted that shading devices can decrease the amount of daylight entering indoor spaces (Hosseini, Yeganeh & Jalali, 2024).

Furthermore, shading systems are widely utilized to reduce glare discomfort, particularly through external applications. Approximately 70% of the cases employed external shading devices to diffuse daylight more evenly while preventing direct sunlight penetration. Despite these advantages, it is evident that such systems can also influence the total amount of daylight received within interior spaces (Zhang & Liu, 2024). Overall, the findings highlight the dual role of shading devices in enhancing visual and thermal comfort while also presenting potential trade-offs in daylight distribution and intensity.

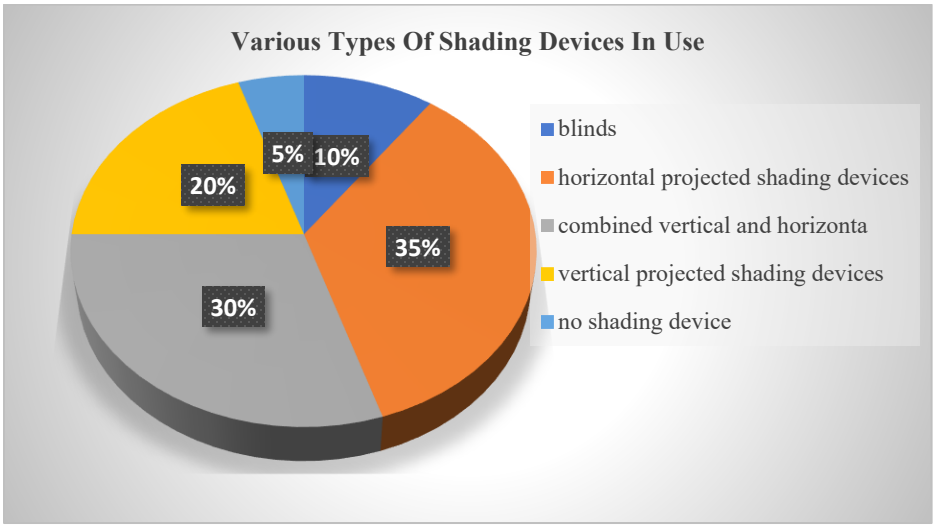

Figure 4: Percentage of the various types of shading devices in use
Source: Authors' Field Survey, 2026

Window Types, Sizes, and Daylighting Performance

Openings constitute the primary source of passive daylight in buildings, making window design a critical factor in indoor illumination. The window types identified across the case studies include projected, casement, louvre, tilt-turn, sliding, and clerestory systems (Borysenko, 2025). In shopping malls featuring atrium configurations, skylights function as expansive overhead apertures, facilitating the penetration of daylight into the building core. The distribution of these window types across the selected case studies is illustrated in Figure 5.

Analysis of daylighting performance (Figure 6) reveals that only 33% of the malls achieve adequate natural illumination, while the remaining 67% rely heavily on electrical and mechanical lighting systems, yet still experience insufficient lighting conditions (Hassan & Mohamed, 2023). Notably, malls incorporating atriums and skylights demonstrate superior daylighting performance compared to those without such architectural features.

Findings from the interviews further indicate that window selection is predominantly driven by aesthetic considerations, as reported in 75% of the cases. Despite this, 68% of respondents rated the availability of daylight within interior spaces particularly atria and circulation zones as moderately satisfactory, citing the presence of natural light even when it was not entirely sufficient. Moreover, a significant proportion of respondents (72%) emphasized that both window size and the inclusion of atrium spaces are key determinants of effective daylight penetration within buildings (Hosseini, Yeganeh, & Jalali, 2024).

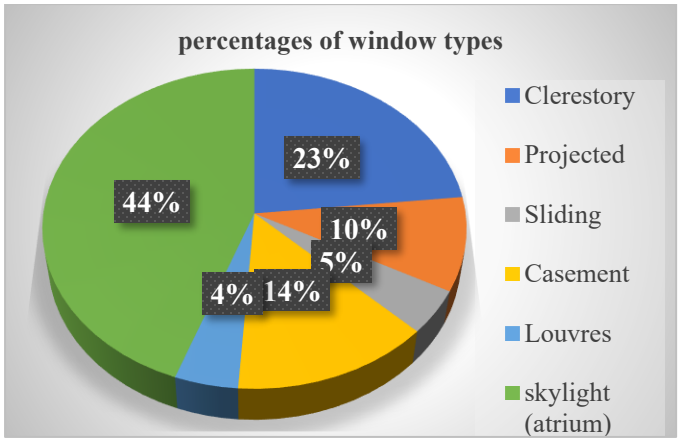

Figure 5: Window types used in the case studies
Source: Authors' Field Survey, 2026

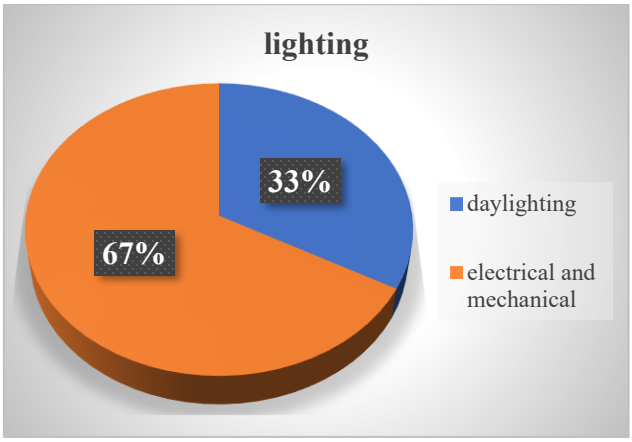

Figure 6: Showing daylighting in the case studies
Source: Authors' Field Survey, 2026

Window Materials

Window materials identified in the surveyed shopping malls were broadly categorized into two components: frame and shutter. The findings indicate that aluminium and steel are the predominant materials used for window frames, while glass is the primary material used for window shutters, consistent with earlier observations by Adedeji and Ogunba (2022).

As illustrated in Figure 5, glass accounts for 58% of window shutter materials, making it the most widely used option due to its aesthetic and daylighting advantages. Aluminium constitutes 42% of window frame materials, while the remaining 58% comprises steel and other alternatives. This distribution suggests a preference for durable and low-maintenance materials in commercial mall construction, although the dominance of glass may also have implications for thermal performance and energy efficiency.

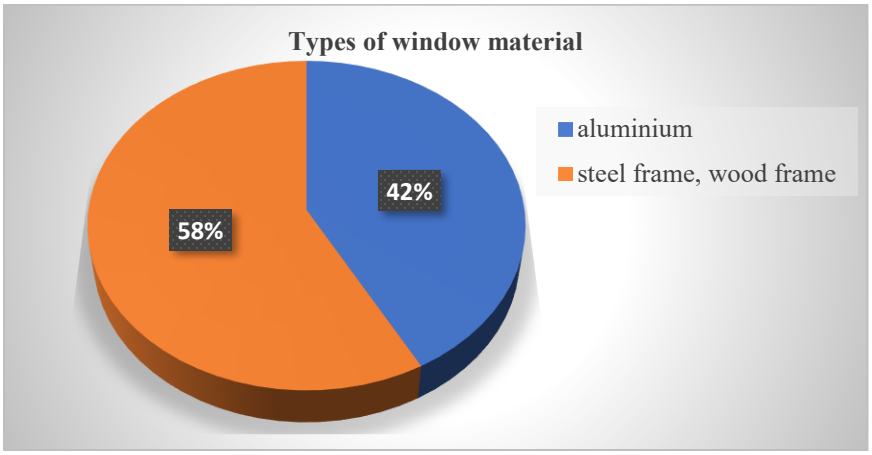

Figure 7: Types of window material
Source: Authors' Field Survey, 2026

Accessibility Features

The assessment of accessibility features across the sampled malls reveals significant inconsistencies in compliance with inclusive design standards. Table 2 summarizes the observed accessibility provisions and their corresponding compliance ratings. Notably, none of the surveyed malls (0%) provided designated parking spaces with appropriate signage for persons with disabilities. This represents a critical shortcoming, as the absence of accessible parking limits proximity to entrances and restricts mobility for users with physical impairments (Oluwole & Adeyemi, 2025).

Furthermore, only 26% of the malls were equipped with both Braille signage and audio guidance systems. Consequently, 74% of the malls lack adequate wayfinding support for individuals with visual impairments, thereby reducing navigability and independence within these spaces.

Table 2: Showing Malls accessibility features and their compliance ratings

Feature	Jabi Lake Mall	Ikeja City Mall	The Palms Mall
Car parks	Moderate	Moderate	Moderate
Handrails	Moderate	Moderate	Moderate
Ramps	Moderate	Moderate	Moderate
Floor surfaces	Moderate	Satisfactory	Moderate
Entrances	Satisfactory	Satisfactory	Satisfactory
Toilets	Satisfactory	Satisfactory	Moderate
Signage	Satisfactory	Satisfactory	Satisfactory

Source: Adapted from Oluwole & Adeyemi (2025)

Inclusive Design Assessment

The inclusive design evaluation conducted by Mshelia, Idakwoji, and Audu (2025) provides additional user-centered insights into the performance of shopping malls in accommodating diverse populations. In terms of usage patterns, 34% of respondents reported visiting malls at irregular intervals, while 25% visited weekly, 12% monthly, 22.5% rarely, and only 6.5% on a daily basis. These patterns may reflect both user preferences and potential accessibility limitations. The most frequently reported combination of accessibility features such as ramps, elevators with Braille controls, and wide entrances was

identified by only 12.5% of respondents. Conversely, 11% indicated that staircases were the sole means of vertical circulation, highlighting a lack of inclusive infrastructure in some facilities.

With respect to wayfinding systems, 40% of respondents reported the absence of both Braille signage and audio guides. While 26% confirmed the presence of both features, 22.5% reported access to Braille signage only, and 7% indicated the availability of audio guides alone. This uneven distribution underscores gaps in sensory accessibility. User satisfaction with sanitary facilities was moderately varied: 28% rated them as adequate, 21% as excellent, and 19% as good. However, a combined 32% rated these facilities as below average or poor, indicating room for improvement in inclusive restroom design.

Ramp provision was evaluated less favorably, with 35% of respondents rating it as below average and 7% as poor. Only 28% rated ramp accessibility as good or excellent, suggesting that approximately 65% of users found ramp provision inadequate. Similarly, parking accessibility for persons with disabilities received mixed evaluations: although 46.5% rated it as good or excellent, a slightly higher proportion (53.5%) rated it as average, below average, or poor. This indicates that parking infrastructure remains insufficiently inclusive.

Pathway and corridor widths were also identified as problematic, with 55.5% of respondents expressing dissatisfaction (below average or poor ratings). Narrow circulation spaces can significantly hinder movement, particularly for wheelchair users and individuals with mobility aids. Overall accessibility ratings further reinforce these concerns. While 35.5% of respondents rated accessibility as good or excellent, a majority (58%) considered it either average or below acceptable standards. This suggests that, although some progress has been made, many shopping malls still fall short of achieving comprehensive inclusive design.

Fire Safety Assessment

The assessment of fire safety provisions in selected shopping malls in Abuja reveals significant deficiencies in both preventive and active fire protection systems. Critical fire prevention installations, including automatic sprinklers, smoke detectors, and drenchers were either inadequately provided or entirely absent. Specifically, sprinklers were installed in only 20% of the malls surveyed, smoke detectors in 35%, while drenchers were not present in any of the facilities. In contrast, more basic fire-fighting equipment such as fire extinguishers (85%) and fire buckets (60%) were relatively common. However, these measures alone are insufficient for controlling large-scale fire incidents, thereby exposing occupants to considerable risk (Sholanke, Dimuna & Olukayode, 2025).

Furthermore, 40% of the malls lacked adequate fire exit signage, which is critical for safe evacuation during emergencies. The absence of clear directional signage significantly increases the likelihood of confusion and delayed evacuation in crisis situations. The study also highlights the implications of high pedestrian traffic on fire risk. With major malls accommodating between 500 and 1,000 visitors per hour many of whom are unfamiliar with emergency systems the probability of fire-related incidents is estimated to increase by approximately 45% compared to buildings with lower occupancy levels (Sholanke, Dimuna & Olukayode, 2025). This underscores the urgent need for comprehensive fire safety planning and user awareness strategies in high-density commercial environments.

Impact on Informal and Small Businesses

The proliferation of shopping malls has had notable adverse effects on surrounding small-scale and informal enterprises. Evidence from Adebayo and Ogunleye (2023) indicates that over 65% of businesses located near newly developed malls experienced a decline in customer patronage. This translated into reduced profits for 70% of small businesses and 80% of informal businesses, suggesting a disproportionately greater impact on the latter.

The primary drivers of this shift were identified as competitive pricing within malls (75%) and the attractiveness of newly developed retail environments (15%). Informal businesses were particularly vulnerable, with only 10% reporting increased profits, compared to 20% of small businesses. Product categories most affected included beverages, detergents, soaps, and juices among informal vendors (75% reporting declines), while small businesses experienced reductions in sales of staple goods such as rice, fresh poultry, and beverages (70%).

In response, both business categories adopted adaptive strategies. Small businesses primarily extended operating hours (44%), engaged in bulk purchasing to reduce prices (22%), and enhanced product presentation (33%). Additional strategies included product customization and provision of credit facilities (both 11%). Informal businesses, on the other hand, focused more on customer-oriented approaches, such as improved service delivery (66%), diversification into everyday household items (66%), and incorporation of auxiliary services like printing and photocopying (44%). Despite these challenges, a majority (60%) of informal business operators expressed optimism about the potential coexistence of malls and traditional retail formats, compared to only 40% of small business owners, indicating differing perceptions of long-term sustainability.

Recreational Communication Space Typology

Applying Borysenko's (2025) typological framework to the Nigerian context reveals that shopping malls exhibit a

combination of introverted and integrated spatial characteristics. Introverted malls, exemplified by The Palms Mall and Ikeja City Mall (representing 40% of the sample), are characterized by enclosed, climate-controlled environments that function as self-contained destinations. A majority of users (65%) in these malls prioritized entertainment and social interaction, reflecting the experiential orientation of such spaces. Conversely, Jabi Lake Mall (20% of the sample) demonstrates integrated characteristics, with greater permeability and stronger connections to surrounding pedestrian networks. Users (58%) in this context emphasized accessibility and convenience as key determinants of satisfaction. Notably, thematic design elements were largely absent, with none of the malls exhibiting strong thematic identities. This suggests a missed opportunity for leveraging local cultural narratives to create distinctive retail environments and enhance user experience.

Urban Integration

The findings indicate that malls located in central urban areas, particularly in Lagos, exhibit relatively stronger physical integration with surrounding street networks. However, integration with formal public transportation systems remains largely unplanned. Instead, transport nodes tend to emerge organically around mall entrances, rather than being deliberately incorporated into the design. Only 20% of the malls studied demonstrated formal integration with public transit systems (Adebayo & Ogunleye, 2023).

In terms of land-use impact, malls were found to stimulate commercial activity within their immediate surroundings. On average, there was a 35% increase in commercial development within a 500-metre radius of mall locations. This effect was more pronounced in peri-urban growth areas (45%) than in established city centres (25%), suggesting that malls play a catalytic role in shaping emerging urban economies (Okonkwo & Eze, 2022).

CONCLUSION

This study reaffirms the critical importance of functional efficiency in the design and operation of shopping malls, particularly in relation to user safety, accessibility, and overall satisfaction. Efficient spatial planning not only enhances user experience and wayfinding but also contributes to energy efficiency and inclusivity. The findings demonstrate that effective mall design can significantly improve navigation, accessibility for persons with disabilities, and spatial usability. However, performance outcomes are strongly influenced by factors such as spatial configuration, vertical circulation design, window placement, building orientation, and environmental context. Linear floor plans were found to outperform racetrack configurations in terms of navigability, with intelligibility scores of 86% and 33%, respectively. Similarly, daylighting performance improves significantly by up to 40% when windows are strategically placed on multiple wall orientations. Courtyards, present in 40% of the malls studied, were identified as effective architectural elements for enhancing natural lighting and serving as spatial landmarks. Despite these positive insights, accessibility remains critically inadequate. None of the malls surveyed provided designated parking for persons with disabilities, and only 26% incorporated both Braille signage and audio guidance systems. This highlights a significant gap in compliance with the Discrimination Against Persons with Disabilities. In conclusion, the study emphasizes the need for a proactive, design-led approach that prioritizes fire safety, accessibility, wayfinding, and environmental performance from the early stages of mall development. Addressing these factors holistically will enable the creation of inclusive, safe, and functionally efficient retail environments that cater to diverse user groups.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed to enhance the design, functionality, and inclusivity of shopping malls in Nigeria:

Optimization of Vertical Circulation Elements

Drawing on the findings of Hosseini, Yeganeh, and Jalali (2024), it is recommended that architects strategically position escalators within the central atrium, oriented at approximately 30° from the primary entrance axis. Elevators should be spatially separated from escalators to improve circulation clarity. This configuration has been shown to enrich spatial experience, reduce directional changes by up to 30%, and enhance accessibility to retail units from multiple vantage points. The absence of this optimal arrangement in existing Nigerian malls (0% compliance) underscores the need for its adoption in future developments.

Adoption of Linear Spatial Configurations

Consistent with the findings of Aigbe, Maina, and Sagada (2024), linear floor plan configurations should be prioritized over racetrack layouts. Linear layouts demonstrate significantly higher intelligibility (86%) compared to racetrack configurations (33%), thereby facilitating improved wayfinding. The maintenance of clear sightlines and visual connectivity to anchor stores and key landmarks is essential. Consequently, overly complex spatial arrangements should be avoided in subsequent mall designs.

Implementation of Universal Design Standards

In line with Oluwole and Adeyemi (2025) and Mshelia, Idakwoji, and Audu (2025), strict adherence to universal design principles is imperative. Developers should ensure:

1. Provision of clearly designated accessible parking spaces with appropriate signage (currently 0% compliance)
2. Installation of secondary, lower handrails to accommodate children and individuals of shorter stature (0% compliance)
3. Use of non-slip flooring materials throughout the facility (currently 33% compliance)
4. Elimination of open stair risers (present in 33% of malls)
5. Inclusion of baby-changing facilities within restroom areas (currently 66% compliance)
6. Continuity of accessible circulation routes across all areas of the mall

Enhancement of Wayfinding Systems
Mall design should incorporate comprehensive, multi-sensory wayfinding systems that integrate visual, tactile, and auditory cues. This includes the provision of Braille signage and audio guidance systems, which are currently present in only 26% of malls. Signage should be strategically located at decision-making points and designed for clarity and legibility. Additionally, corridor widths should meet a minimum of 1800 mm to facilitate the simultaneous passage of wheelchair users, a standard currently met by only 45% of malls.

Strengthening of Regulatory Enforcement
Regulatory authorities should enforce compliance with the Discrimination Against Persons with Disabilities (Prohibition) Act (2018) through systematic inspections and the imposition of penalties for non-compliance. Incentive mechanisms, such as tax reliefs, should be introduced to encourage inclusive design practices. Furthermore, the integration of inclusive design education into architectural licensure requirements is recommended.

Improvement of Fire Safety Management
Mall operators should prioritize the retrofitting of existing facilities with essential fire safety systems, including automatic sprinklers (currently 20% coverage), smoke detectors (35%), and drencher systems (0%). Regular inspection and maintenance of firefighting equipment are critical. Clear and visible fire exit signage must be installed (currently absent in 40% of malls), alongside the implementation of periodic fire drills to ensure system effectiveness and occupant preparedness.

Support for Informal and Small Business Integration
Policymakers should adopt balanced regulatory frameworks that support the coexistence of formal and informal retail sectors. This includes reducing excessive regulatory barriers while enhancing incentives for formalization. Spatial planning strategies should deliberately accommodate both sectors, particularly in light of evidence indicating that 80% of informal businesses have experienced profit declines following mall development.

Integration with Public Transportation Networks
Developers are encouraged to collaborate with municipal authorities to integrate malls with existing public transportation systems, a feature currently observed in only 20% of malls. The provision of organized transit stops and stations at mall entrances will improve accessibility, increase foot traffic, and reinforce the role of malls as community hubs.

REFERENCES

Adebayo, T. A., & Ogunleye, O. S. (2023). Impact of shopping mall development on urban informal retail in Lagos, Nigeria. Journal of Urban and Regional Planning, 15(2), 112-128.

Adedeji, J. A., & Ogunba, O. A. (2022). Spatial configuration and user movement patterns in Nigerian shopping malls. West African Journal of Architecture, 8(1), 45-62.

Adewale, B. A., & Ogunba, O. A. (2024). Shopping malls as urban anchors: A study of commercial development patterns in Southwest Nigeria. African Journal of Built Environment Research, 12(3), 78-95.

Aigbe, J. I., Maina, J. J., & Sagada, M. L. (2024). Exploring spatial configuration for effective way-finding in the design of shopping malls in Abuja, Nigeria. BAU Journal - Creative Sustainable Development, 5(2), Article 4.

Akinwumi, I. O., & Ogunbiyi, M. A. (2023). Wayfinding behaviour in complex commercial buildings: A study of selected Nigerian shopping malls. Journal of Environmental Psychology and Design, 11(4), 201-218.

Borysenko, A. (2025). Modern transformation of spatial typology of shopping centers. Architecture, Civil Engineering, Environment, 18(1), 1-15.

Chen, L., & Wang, H. (2023). The role of shopping malls in urban social life: A comparative study of developing economies. Journal of Urban Design and Development, 149(3), 04023012.

Eze, C. U., & Okoro, C. O. (2024). Behavioural responses to spatial complexity in retail environments. International Journal of Architectural Research, 18(2), 234-251.

Federal Ministry of Justice. (2021). Implementation status of the Discrimination Against Persons with Disabilities (Prohibition) Act 2018. Government Printers, Abuja.

Hassan, R. M., & Mohamed, N. A. (2023). Wayfinding and spatial cognition in multi-level commercial buildings. Journal of Environmental Psychology, 85, 101-118.

Hosseini, Z., Yeganeh, M., & Jalali, S. (2024). Exploring the impact of vertical access elements on visual richness and space quality within shopping mall atrium. Buildings, 14(9), 2724.

Kim, J. H., & Lee, S. Y. (2022). User satisfaction and spatial legibility in large-scale retail environments. Journal of Retailing and Consumer Services, 65, 102-118.

Mshelia, L. B., Idakwoji, W. A., & Audu, J. (2025). An assessment of the level of integration of inclusive design principles in a neighbourhood shopping mall in Abuja Nigeria. IIARD International Journal of Geography & Environmental Management, 11(8), 77-90.

Ogunbiyi, M. A., & Adeyemo, T. A. (2024). Fire safety management in Nigerian public buildings: Challenges and policy recommendations. Journal of Building Surveying and Safety, 9(2), 67-84.

Okonkwo, C. A., & Eze, P. C. (2022). The informal economy and urban retail transformation in Nigeria. African Journal of Economics and Sustainable Development, 5(3), 45-62.

Okpara, N. C., & Nwachukwu, C. C. (2023). Cultural identity and contemporary mall architecture in Nigeria. Journal of African Architecture, 7(1), 23-41.

Olagunju, D. O., & Adebayo, O. A. (2022). Cognitive mapping and spatial orientation in complex buildings: A review of Lynch's legacy in contemporary research. Nigerian Journal of Architectural Research, 6(2), 34-52.

Oluwole, B. O., & Adeyemi, A. A. (2025). Compliance of accessibility features of selected shopping malls with universal design strategies in Nigeria. Civil Engineering and Architecture, 13(4), 3144-3159.

Sholanke, A. B., Dimuna, K. O., & Olukayode, B. G. (2025). Evaluation of fire safety management strategies in selected shopping malls in Abuja, Nigeria. F1000Research, 14, 471.

World Health Organization. (2023). Universal design principles for inclusive built environments. WHO Press, Geneva.

Zhang, W., & Liu, Y. (2024). Recreational communication space and user experience in contemporary shopping centers. Journal of Urban Design, 29(2), 156-175.