

Assessment of Spatial Layout and Customer Satisfaction in Selected Mixed-Use Shopping Malls in Ibadan, Nigeria

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Abstract

The spatial organization of shopping malls influences users' movement, accessibility, navigation, and overall shopping experience. However, limited empirical evidence exists on the relationship between specific spatial layout characteristics and customer satisfaction in Nigerian mixed-use shopping malls. This study therefore assessed the spatial layout and customer satisfaction of selected mixed-use shopping malls in Ibadan, Nigeria, and examined the relationship between both variables. A descriptive mixed-method approach was adopted, combining field observation with questionnaire surveys. Thirteen shopping malls were purposively selected, while 304 questionnaires were administered to mall users, of which 283 valid responses were analysed, representing a 93% response rate. Data were analysed using Mean Weighted Value (MWV), descriptive statistics, and Pearson Product-Moment Correlation. Findings showed that spatial layout was generally perceived as adequate, with an overall MWV of 3.86. Cleanliness and maintenance of circulation spaces recorded the highest rating (MWV = 4.14), while accessibility for persons with disabilities recorded the lowest (MWV = 3.44). Customer satisfaction was also generally positive (MWV = 3.77), with Ventura Mall recording the highest rating (MWV = 3.91) and Grandex Mall the lowest (MWV = 3.55). Pearson correlation revealed a strong, positive and statistically significant relationship between spatial layout and customer satisfaction ($r = 0.879$, $p < 0.001$). The study concludes that spatial organization is strongly associated with customer satisfaction in mixed-use shopping malls. It recommends improved universal accessibility, vertical circulation, wayfinding, and parking organization, alongside regular user-based spatial assessment to enhance mall performance and customer experience.

Keywords: Spatial layout; customer satisfaction; shopping malls; mixed-use development; spatial organization; Ibadan; Nigeria.

Introduction

The growing development of shopping malls as centres for retail, leisure, dining, entertainment, and social activities has increased the importance of how these facilities are spatially organized. Mixed-use shopping malls accommodate diverse functions and large numbers of users, requiring spatial arrangements that support accessibility, circulation, visibility, navigation, and convenient interaction with facilities. Consequently, the performance of shopping malls depends not only on their commercial offerings but also on the quality of their spatial environment and the experience it provides to customers (Iroham *et al.*, 2019; Olonade *et al.*, 2021b Douglas *et al.*, 2025). Spatial layout determines how users move through and interact with different areas of a shopping mall. It encompasses characteristics such as entrances and exits, circulation routes, shop arrangement, anchor-store location, accessibility, visibility, wayfinding, and the positioning of supporting amenities (Makinde, 2020). Effective spatial organization facilitates movement, improves orientation, enhances accessibility, and increases the visibility of commercial spaces, while poorly organized layouts may result in congestion, confusion, inefficient movement, and negative user experiences (Salawu *et al.*, 2020; Olonade *et al.*, 2021c Ihunwo & Enwin, 2021). Thus, spatial layout represents an important physical dimension of the shopping environment that can shape how customers experience and evaluate mall facilities.

Customer satisfaction is an important indicator of users' evaluation of shopping environments. In shopping malls, satisfaction may be influenced by ease of movement, accessibility, visibility of shops, clarity of wayfinding, comfort, safety, ambience, and the convenience of supporting facilities. Previous studies have linked physical and environmental attributes of shopping malls with customer experience, patronage, loyalty, and satisfaction (Dubihlela & Dubihlela, 2014; Idoko, Ukenna, & Obeta, 2019; Makhitha, 2023; Olla, Amole, & Amole, 2023). However, existing studies have often examined these attributes broadly, with limited attention to the specific contribution of spatial layout characteristics to overall customer satisfaction. This issue is particularly relevant in Ibadan, where the development of modern shopping malls has created increasingly complex environments combining retail, food, entertainment, leisure, and other supporting functions (Olonade *et al.*, 2021a). Studies of shopping malls in Ibadan and other Nigerian cities have examined facilities, patronage, accessibility, ambience, and customer experience (Iroham *et al.*, 2019; Olla, Amole, & Amole, 2023).

However, limited empirical evidence exists on how specific spatial layout characteristics, including circulation, accessibility, visibility, wayfinding, and supporting amenities, relate to customers' overall satisfaction across different mixed-use shopping mall facilities. Furthermore, the integration of spatial layout assessment with users' evaluations of satisfaction remains relatively underexplored in the Nigerian context. Therefore, this study evaluates the spatial layout of selected mixed-use shopping mall facilities in Ibadan, assesses customer satisfaction with their spatial layout characteristics, and determines the relationship between spatial layout characteristics and overall customer satisfaction. The study provides empirical evidence on the role of spatial organization in shaping customer experience within mixed-use shopping mall environments.

Study Area

The study was conducted in Ibadan, the capital of Oyo State in South-Western Nigeria, located approximately between latitudes 7°23'N and 7°27'N and longitudes 3°53'E and 3°56'E. Ibadan is a major commercial centre characterized by rapid urban and retail development. The city hosts established mixed-use shopping malls, including Cocoa Mall, Palms Mall, Heritage Mall, and Ventura Mall, which accommodate retail, leisure, dining, and social activities. These facilities provide suitable settings for evaluating spatial layout characteristics and their relationship with customer satisfaction. The study therefore focused on selected mixed-use shopping malls in Ibadan.

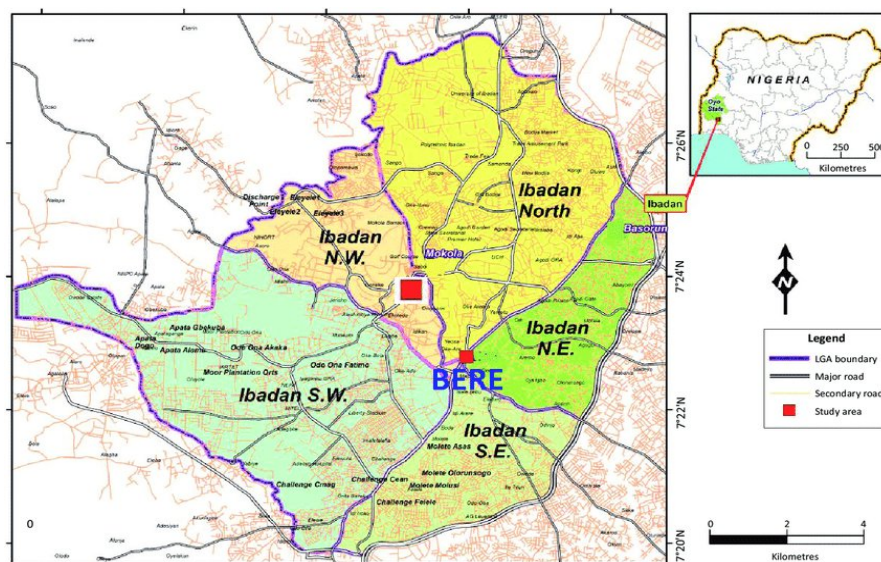


Figure 1.0: Map showing the five Local Government Areas of Ibadan, Oyo State, Nigeria
Source: Salami *et al.* (2017).

Literature Review

The development of mixed-use commercial environments has transformed contemporary retail spaces by integrating shopping with leisure, dining, entertainment, and other complementary activities. Mixed-use development involves the combination of compatible land uses within a shared development to improve accessibility, land-use efficiency, social interaction, and urban vitality (Geyer, 2024; Jaroszewicz et al., 2023). Its contemporary application has expanded beyond traditional land-use integration to create multifunctional environments that respond to changing patterns of urban consumption and social interaction. Within this context, shopping malls have evolved from conventional retail centres into multifunctional destinations where spatial organization is increasingly important to their functionality and user experience. In Nigeria, the growth of modern shopping malls reflects changing lifestyles and urban development, with facilities increasingly incorporating retail, leisure, food, entertainment, and social functions (Olonade et al., 2021a).

The spatial organization of shopping malls is central to how users access, navigate, and interact with these multifunctional environments (Makinde, *et al.*, 2025a). Spatial layout refers to the arrangement and relationship of spaces, circulation routes, entrances, exits, retail units, anchor stores, and supporting facilities within a development. Studies have shown that mall layouts influence pedestrian movement, accessibility, visibility, retail exposure, and overall shopping efficiency (Andi et al., 2021; Arslan & Ergener, 2023; Riaz et al., 2024). Common mall configurations include linear, circular, radial, and keyhole or dumbbell layouts, with the location of anchor stores and circulation routes playing an important role in directing customer movement and distributing footfall (Arslan & Ergener, 2023). Effective spatial organization therefore requires logical zoning, adequate circulation, appropriate positioning of entrances and exits, accessible vertical movement, and convenient relationships between retail and supporting facilities (Hosseini, 2024).

Beyond physical arrangement, the legibility and accessibility of mall spaces influence how easily customers understand and navigate the environment. Wayfinding, visibility, signage, landmarks, and clear circulation routes assist users in locating destinations and reducing difficulties associated with unfamiliar environments (Ihunwo & Enwin, 2021). Similarly, accessibility features such as ramps, elevators, accessible toilets, and appropriately designed circulation routes support inclusive use of shopping facilities (Ashraf, Michel, & Elshafei, 2024). Research further indicates that spatial organization can influence customer behaviour by affecting movement patterns, store exposure, convenience, and the time users spend within shopping environments (Ghanim & Mustafa, 2025). Thus, spatial layout extends beyond the physical placement of spaces to become an important factor in the functional and experiential performance of shopping malls. Customer satisfaction has consequently become an important consideration in evaluating shopping mall performance. It reflects customers' overall assessment of their experiences in relation to their expectations and may be influenced by facility quality, accessibility, service quality, safety, ambience, convenience, and the organization of the shopping environment (El-Adly & Eid, 2016; Makgopa, 2018). Studies have identified well-maintained facilities, adequate parking, comfortable circulation spaces, security, entertainment, dining, and other supporting services as important contributors to positive customer experiences and loyalty (Memon et al., 2022). However, while these studies demonstrate the importance of overall facility and service quality, spatial characteristics represent a distinct dimension of the shopping environment that warrants closer examination.

The relationship between spatial layout and customer satisfaction has received increasing attention in environmental and retail research. Efficient circulation, clear wayfinding, accessibility, visibility, logical zoning, and convenient facility arrangement can reduce navigation difficulties and improve the overall shopping experience (Douglas et al., 2025; Hosseini, 2024). Conversely, congestion, poorly located entrances and exits, inadequate parking, confusing circulation, limited accessibility, and ineffective signage

can create inconvenience and dissatisfaction (Ihunwo & Enwin, 2021). Spatial layout may therefore influence satisfaction both directly, through convenience and accessibility, and indirectly, through its effects on movement, orientation, and interaction with commercial facilities (Makinde, *et al*, 2025b). Empirical studies in Africa and Nigeria have examined different aspects of shopping mall performance, including facilities, patronage, accessibility, ambience, customer experience, and spatial organization (Iroham et al., 2019; Olla, Amole, & Amole, 2023; Aigbe, Maina, & Sagada, 2024). Recent studies have also considered wayfinding, circulation, and spatial characteristics in relation to user experience (Douglas et al., 2025). Despite these contributions, much of the existing Nigerian literature examines physical facilities, service quality, or customer experience as broad categories, while limited attention has been given to the combined assessment of specific spatial layout characteristics and their relationship with overall customer satisfaction across multiple mixed-use shopping malls. This creates a gap in understanding which aspects of spatial organization are most relevant to customers' evaluations of shopping mall environments.

The literature therefore establishes that the physical organization of shopping malls plays an important role in accessibility, movement, navigation, and user experience, while customer satisfaction provides an important measure of how users evaluate these environments. However, the relationship between specific spatial layout characteristics and overall customer satisfaction remains insufficiently established within the Nigerian context, particularly across selected mixed-use shopping malls in Ibadan. This study addresses this gap by evaluating the spatial layout of selected mixed-use shopping mall facilities in Ibadan, assessing customer satisfaction with their spatial layout characteristics, and determining the relationship between spatial layout characteristics and overall customer satisfaction.

Research Methodology

Both primary and secondary data were used for the study. A descriptive mixed-methods approach was adopted, combining field observation and questionnaire surveys. Primary data were obtained through observation of selected mixed-use shopping malls and structured questionnaires administered to mall users, while secondary data were obtained from relevant literature, reports, and available architectural documents. A multi-stage sampling technique was adopted. Ibadan was purposively selected because of its established mixed-use shopping mall developments. Thirteen shopping malls were subsequently selected based on their mixed-use functions, facilities, and accessibility. The selected malls comprised Cocoa Mall, Heritage Mall Complex, Ventura Mall, Palms Mall, Jericho Mall, Ace Mall, Odua Shopping Complex, Summit Mall, Brent Mall, Akobo Shopping Mall, Bond Mall, Grandex Mall, and Anchor Mall. The sampling frame comprised 1,272 mall users. Using the Slovin formula at a 5% margin of error, a sample size of 304 respondents was obtained. Respondents were selected from mall users during periods of active use.

An observation checklist was used to assess spatial layout characteristics, including circulation, accessibility, visibility, wayfinding, entrances and exits, spatial zoning, and supporting facilities. The questionnaire assessed users' perceptions of these characteristics and their overall satisfaction using a structured Likert-scale format. Photographs and available architectural drawings supported the spatial assessment. Data were analysed using descriptive and inferential statistics in SPSS. Frequencies, percentages, mean scores, and standard deviations were used to summarize the spatial layout and satisfaction responses, while Pearson correlation and regression analysis were used to determine the relationship between spatial layout characteristics and overall customer satisfaction. Observational data were analysed through spatial assessment and content analysis.

Results and Discussion

Assessment of Spatial Layout Characteristics

Respondents generally rated the spatial layout of the selected shopping malls favourably, with an overall mean score of 3.86 based on 283 valid responses. As presented in Table 1, cleanliness and maintenance of circulation spaces recorded the highest rating (MWV = 4.14), followed by visibility and accessibility of

mall entrances (4.07) and zoning of retail and service areas (4.06). Corridor width (3.96), internal circulation (3.95), and overall spatial organization (3.94) also received high ratings, indicating positive perceptions of movement and functional organization within the malls. The lowest ratings were recorded for accessibility for persons with disabilities (3.44) and vertical circulation (3.53), followed by parking layout and accessibility (3.67) and open spaces and atrium design (3.74). Signage and wayfinding recorded a moderate rating (3.82). Overall, the findings indicate that the malls perform well in general circulation, entrance accessibility, and spatial zoning, while inclusive accessibility and vertical movement remain the weakest spatial attributes.

Table 1: Assessment of Spatial Layout Characteristics and Facilities in Selected Shopping Malls (n = 283)

S/N	Spatial Layout Characteristics and Facilities	1	2	3	4	5	N	TMV	MWV	Rank
I	Cleanliness and maintenance of circulation spaces	5	11	35	120	112	283	1172	4.14	1st
ii	Visibility and accessibility of mall entrances	5	14	36	128	100	283	1153	4.07	2nd
iii	Zoning of retail and service areas	6	13	41	121	102	283	1149	4.06	3rd
Iv	Width of corridors and walkways	7	16	47	123	90	283	1122	3.96	4th
V	Internal circulation (ease of movement within the mall)	8	18	42	126	89	283	1119	3.95	5th
vi	Overall spatial organization of the mall	9	19	43	122	90	283	1114	3.94	6th
vii	Layout of food court and dining areas	8	18	52	117	88	283	1108	3.92	7th
viii	Emergency exits and safety routes	9	21	49	116	88	283	1102	3.89	8th
Ix	Signage and wayfinding systems	10	22	54	119	78	283	1082	3.82	9th
X	Open spaces and atrium design	12	24	60	116	71	283	1059	3.74	10th
xi	Parking layout and accessibility	13	29	61	114	66	283	1040	3.67	11th
xii	Vertical circulation (stairs, lifts, escalators)	15	34	76	101	57	283	1000	3.53	12th
xiii	Accessibility for persons with disabilities	18	42	73	97	53	283	974	3.44	13th
Average									50.13/13 = 3.86	

Customer Satisfaction with Spatial Layout Characteristics

Customer satisfaction with the spatial layout of the selected shopping malls was generally favourable, with an overall Grand MWV of 3.80 based on 283 valid responses. As presented in Table 2, Ventura Mall recorded the highest satisfaction rating (MWV = 3.91), followed by Cocoa Mall (3.88) and Ace Mall (3.87).

Palms Mall and Bond Mall jointly ranked fourth (3.86), while Summit Mall (3.84) and Brent Mall (3.82) also recorded relatively high satisfaction levels.

Moderate satisfaction was recorded for Heritage Mall Complex (3.72), Jericho Mall (3.69), Akobo Shopping Mall (3.67), Anchor Mall (3.66), and Odua Shopping Complex (3.63). Grandex Mall recorded the lowest satisfaction score (3.55). Nevertheless, all malls recorded MWVs above the neutral midpoint of the five-point scale, indicating generally favourable customer perceptions of their spatial layout. Overall, the findings indicate that customers were generally satisfied with the spatial layout of the selected malls, although satisfaction varied across the facilities. The variation suggests differences in users' perceptions of circulation, accessibility, wayfinding, spatial organization, and the arrangement of supporting facilities across the malls.

Table 2: Comparative Assessment of Customer Satisfaction with Spatial Layout Characteristics of Selected Shopping Malls

S/N	Shopping Mall	Sample Size (n)	Grand SWV	Grand MWV	Decision	Rank
1	Ventura Mall	30	1,525	3.91	Satisfactory	1st
2	Cocoa Mall	58	2,924	3.88	Satisfactory	2nd
3	Ace Mall	25	1,257	3.87	Satisfactory	3rd
4	Palms Mall	25	1,254	3.86	Satisfactory	4th
5	Bond Mall	22	1,104	3.86	Satisfactory	4th
6	Summit Mall	21	1,049	3.84	Satisfactory	6th
7	Brent Mall	21	1,042	3.82	Satisfactory	7th
8	Heritage Mall Complex	26	1,256	3.72	Satisfactory	8th
9	Jericho Mall	18	863	3.69	Satisfactory	9th
10	Akobo Shopping Mall	17	812	3.67	Satisfactory	10th
11	Anchor Mall	14	666	3.66	Satisfactory	11th
12	Odua Shopping Complex	16	755	3.63	Satisfactory	12th
13	Grandex Mall	11	508	3.55	Satisfactory	13th
Average				48.95/13 = 3.77		

Relationship between Spatial Layout and Customer Satisfaction

Table 3 shows the regression analysis results. The result displays a strong and significant relationship between spatial layout and customer satisfaction in the study areas with $p < 0.000$ and F-value of 35.042. Likewise, a strong correlation between the dependent and independent variables is shown by a correlation coefficient (R) of 0.780 and a coefficient of multiple determinations (R^2) of 0.609. One found that a magnitude change in spatial layout account for approximately 60.9% of the difference in with the customer satisfaction. In other words, spatial layout factors in the study accounted for 60.9% of the variation in observed Customer Satisfaction.

Table 3: The Regression Analysis Results Showing the Relationship between Spatial Layout and Customer Satisfaction.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780 ^a	.609	.592	.83183

a. Predictors: (Constant), Accessibility for persons with disabilities, Internal circulation (ease of movement within the mall), Parking layout and accessibility, Overall spatial organization of the mall, Open spaces and atrium design, Layout of food court and dining areas, Visibility and accessibility of mall entrances, Emergency exits and safety routes, Width of corridors and walkways, Signage and wayfinding systems, Vertical circulation (stairs, lifts, escalators), Zoning of retail and service areas

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780 ^a	.609	.592	.83183

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	290.964	12	24.247	35.042	.000 ^a
	Residual	186.824	270	.692		
	Total	477.788	282			

a. Predictors: (Constant), Accessibility for persons with disabilities, Internal circulation (ease of movement within the mall), Parking layout and accessibility, Overall spatial organization of the mall, Open spaces and atrium design, Layout of food court and dining areas, Visibility and accessibility of mall entrances, Emergency exits and safety routes, Width of corridors and walkways, Signage and wayfinding systems, Vertical circulation (stairs, lifts, escalators), Zoning of retail and service areas

b. Dependent Variable: Customer Satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.234	1.339		2.416	.016
	Visibility and accessibility of mall entrances	-.536	.156	-.531	-3.427	.001
	Zoning of retail and service areas	-.093	.213	-.090	-.435	.664
	Width of corridors and walkways	-.016	.164	-.013	-.100	.921
	Internal circulation (ease of movement within the mall)	-.525	.183	-.514	-2.868	.004
	Overall spatial organization of the mall	.534	.140	.498	3.806	.000
	Layout of food court and dining areas	-.399	.084	-.412	-4.728	.000
	Emergency exits and safety routes	-.138	.060	-.138	-2.299	.022
	Signage and wayfinding systems	.276	.240	.209	1.147	.252
	Open spaces and atrium design	.644	.192	.413	3.347	.001
	Parking layout and accessibility	-.817	.168	-.660	-4.849	.000
	Vertical circulation (stairs, lifts, escalators)	1.219	.265	.915	4.592	.000
	Accessibility for persons with disabilities	.154	.063	.113	2.461	.014

a. Dependent Variable: Customer Satisfaction

Table 4 shows that the computed Pearson's correlation (r) among pairs of the thirteen (13) identified relevant Spatial Layout variables in the study area. The result of finding in column cleanliness and maintenance of circulation spaces, zoning of retail and service areas, width of corridors and walkways, layout of food court and dining areas, signage and wayfinding systems, open spaces and atrium design, parking layout and accessibility, accessibility for persons with disabilities reveals that all the variable were all strongly correlated having both positive and negative correlation coefficient of 1.000**, -0.473**, 0.152*, -0.356**, -0.192**, 0.506**, -0.425**, 0.220** respectively at either one tail or two tail. The result reveal that ** Correlation is significant at the 0.01 level and * Correlation is significant at the 0.05 level. The variables that include: visibility and accessibility of mall entrances, internal circulation (ease of movement within the mall), overall spatial organization of the mall, emergency exits and safety routes, vertical circulation (stairs, lifts, escalators) were not correlated having 0.090, 0.067, 0.053, -0.068, -0.006 respectively.

Table 4: Results of Relationship between Spatial Layout and Customer Satisfaction.in the Study Areas Using Pearson's Correlation Co-efficient (r)

	i	ii	Iii	Iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Customer Satisfaction
I	1													
Ii	.090	1												
iii	-.473**	-.359*	1											
Iv	.152*	-.382*	.076	1										
V	.067	-.224*	-.128*	.581**	1									
Vi	.053	.300**	-.458*	-.170*	.226**	1								
vii	-.356**	.241**	.056	-.225*	.000	.409**	1							
viii	-.068	.151*	-.091	-.443*	-.720*	-.038	.068	1						
Ix	-.192**	.466**	.191**	-.345*	-.273*	.478**	.155**	.146*	1					
X	.506**	.329**	-.505*	.139*	-.238*	-.076	.009	.247**	-.140*	1				
xi	-.425**	.180**	.502**	-.432*	.024	.080	.338**	-.189*	.464**	-.460*	1			
xii	-.006	.330**	.131*	-.064	.457**	-.055	.227**	-.478*	-.060	-.101	.615**	1		
xiii	.220**	.205**	-.169*	-.116	-.013	-.140*	-.263*	-.054	-.143*	-.039	-.120*	.124*	1	
Customer Satisfaction	1.000**	.090	-.473*	.152*	.067	.053	-.356*	-.068	-.192*	.506**	-.425*	-.006	.220**	1

Pearson Product-Moment Correlation (PPMC) was used to determine the relationship between spatial layout and customer satisfaction across the 13 selected shopping malls. Spatial layout recorded a mean score of 3.86 (SD = 0.12), while customer satisfaction recorded 3.77 (SD = 0.13), indicating generally favourable assessments with limited variation among the malls.

Table 5: Pearson Correlation between Spatial Layout and Customer Satisfaction

Variables	Spatial Layout	Customer Satisfaction
Spatial Layout	1.000	0.879
Customer Satisfaction	0.879	1.000
Sig. (2-tailed)	—	<0.001
N	13	13

The analysis revealed a strong, positive and statistically significant relationship between spatial layout and customer satisfaction ($r = 0.879$, $p < 0.001$) (see Table 5). The result indicates that malls with higher-rated spatial layouts also tended to record higher customer satisfaction. The coefficient of determination ($r^2 = 0.773$) suggests that approximately 77.3% of the variance is shared between the two variables, indicating a substantial association. However, the result does not imply causation, as customer satisfaction may also be influenced by factors such as service quality, tenant mix, security, maintenance, ambience, and pricing. The finding provides empirical evidence that spatial layout is strongly associated with customer satisfaction in the selected shopping malls. In particular, the relationship suggests that the quality of circulation, accessibility, wayfinding, zoning, and spatial organization may be important dimensions of the overall shopping experience.

Hypothesis Decision

H₀₁: There is no significant relationship between spatial layout and customer satisfaction in selected shopping malls.

Given that $r = 0.879$ and $p < 0.001 < 0.05$, the null hypothesis is rejected. The study therefore establishes a significant and strong positive relationship between spatial layout and customer satisfaction among the selected shopping malls.

Conclusion

This study enhances understanding of the role of spatial layout characteristics in shaping customer satisfaction within selected mixed-use shopping malls in Ibadan. The findings demonstrate that effective spatial design, particularly internal circulation, overall spatial organization, and parking accessibility, plays a major role in improving movement efficiency, spatial legibility, and user comfort. While most spatial and facility-related indicators were positively rated, areas such as accessibility for persons with disabilities, emergency exits, noise control, and open space provision were identified as weak points, indicating gaps in inclusivity, safety visibility, and experiential quality. Furthermore, the study establishes a strong positive relationship between spatial layout characteristics and customer satisfaction, confirming that ease of movement, accessibility, and spatial clarity are key determinants of user experience and willingness to revisit. Findings revealed that the spatial layout of the selected mixed-use shopping malls was generally adequate, with an overall MWV of 3.86. Cleanliness and maintenance of circulation spaces (MWV = 4.14), entrance visibility and accessibility (4.07), and retail-service zoning (4.06) were the highest-rated characteristics. However, accessibility for persons with disabilities (3.44) and vertical circulation (3.53) recorded the lowest ratings, indicating areas requiring improvement. Customer satisfaction was also generally high (MWV = 3.80), with Ventura Mall recording the highest rating (3.91) and Grandex Mall the lowest (3.55). A strong positive and statistically significant relationship was established between spatial layout and customer satisfaction ($r = 0.879$, $p < 0.001$), confirming that better-rated spatial layouts were associated with higher customer satisfaction. Overall, the research contributes to urban and architectural design knowledge by demonstrating that while functional efficiency is well addressed in the selected malls, greater attention is needed toward inclusive design, environmental comfort, and experiential spatial quality to achieve a more balanced and user-centred shopping environment. Therefore, universal accessibility, vertical circulation, wayfinding, and parking organization should be improved, particularly in lower-

performing malls. Regular user-based assessment is also recommended to guide spatial improvements and facility management. Overall, shopping mall planning and management should prioritise efficient circulation, accessibility, legibility, and functional spatial organization to enhance customer satisfaction.

Recommendations:

Improvement of Spatial Layout and Circulation Efficiency: Shopping mall designs should continue to prioritize effective internal circulation, overall spatial organization, and parking accessibility, as these are key drivers of user satisfaction. Attention should also be given to improving zoning of functions, corridor design, vertical circulation systems, and food court layouts to enhance overall spatial performance.

Enhancement of Customer Satisfaction Through Facility Upgrades: Mall operators should maintain strengths in cleanliness, safety, and spatial convenience while improving weaker areas such as accessibility for persons with disabilities, noise control, ventilation, seating and relaxation spaces, restrooms, natural lighting, and payment systems to achieve a more comfortable and inclusive user experience.

Strengthening the Spatial Layout–Satisfaction Relationship in Future Designs: Future shopping mall developments should emphasize circulation efficiency, spatial legibility, entrance visibility, signage systems, parking design, and intuitive spatial planning, as these elements have been shown to strongly influence customer satisfaction and repeat patronage.

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