



STUDENT HOUSING SATISFACTION AND THE PERCEIVED IMPORTANCE OF BUILDING FORMS AND ARCHITECTURAL ELEMENTS IN ZURU, NIGERIA

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ABSTRACT

This study examined student housing satisfaction and the perceived importance of building forms and architectural elements among students in Zuru, Kebbi State, Nigeria, using Federal University of Agriculture, Zuru (FUAZ) as the study context. A mixed-method approach combining a questionnaire survey with open-ended responses was adopted. From a population of 1,136 undergraduate students, a sample size of 296 was determined using Yamane's formula, while 194 valid questionnaires were returned, representing a 65.5% response rate. Respondents lived in university hostels (28.9%), private hostels (14.4%), rented apartments (31.4%) and family residences (24.2%); results were analysed for the pooled sample and therefore describe general student housing conditions rather than hostel-specific building forms. Descriptive statistics, including frequencies, percentages, mean scores, standard deviations and ranking, were used for analysis. Findings showed generally neutral satisfaction with existing accommodation, with mean scores ranging from 2.72 to 3.21. Accessibility and ease of movement recorded the highest satisfaction, while circulation recorded the lowest. Students rated adequate room arrangement, natural ventilation, accessible circulation, outdoor seating and natural lighting as particularly important. Courtyard form was also highly rated. Outdoor relaxation spaces, dedicated study rooms, indoor recreation, landscaped courtyards and universal accessibility were the most preferred features. The study concludes that user satisfaction is associated with functional spatial organization, environmental quality, accessibility, privacy, safety, academic support and opportunities for social and recreational interaction. Further research should disaggregate respondents by accommodation type and document the surveyed buildings with measured drawings.

Keywords: Accessibility; Architectural Elements; Building Forms; Student Housing; User Satisfaction

1 INTRODUCTION

Student accommodation is an important component of the university environment because it provides spaces for sleeping, studying, social interaction and recreation. The physical characteristics of these environments influence how students use and evaluate their accommodation (Amole, 2009; Saleem & Alchalabi, 2025). Building form, spatial organization and architectural elements such as room arrangement, circulation, openings, corridors and communal spaces can therefore affect functionality, environmental quality and user satisfaction (Amole, 2009; Haruna et al., 2018;

Ching, 2014). Residential satisfaction is generally influenced by the extent to which housing conditions meet occupants' physical, functional, social and environmental expectations (Emami & Sadeghlou, 2021; Mridha, 2023).

Student housing requires more than the provision of sleeping spaces. Adequate room arrangement, privacy, accessibility, security, circulation, study areas and recreational facilities contribute to students' residential experience (Ibem et al., 2017; Nissi et al., 2020). Building forms such as linear, courtyard and cluster configurations create different relationships between private, shared and circulation spaces (Amole, 2007; Ching, 2014). Space-syntax research shows that the configuration of spaces, and not only their individual size or appearance, shapes patterns of movement and encounter (Hillier & Hanson, 1984; Hillier, 1996), while adaptive thermal comfort research shows that comfort in naturally ventilated buildings depends on climatic context and on occupants' opportunities to adjust their environment (Nicol & Humphreys, 2002). Evaluations of student housing have likewise linked satisfaction to room layout and technical performance such as thermal comfort (Hassanain, 2008). Post-occupancy evaluation provides a framework for testing such relationships from the occupants' perspective once buildings are in use (Preiser et al., 2015). Architectural elements, including windows, doors, corridors and openings, are described in standard design references (Ching, 2014; Neufert & Neufert, 2012) and are associated with movement, ventilation, lighting and interaction.

Environmental conditions are particularly important in student accommodation located within hot climates. Building orientation, openings and spatial configuration can influence natural ventilation and daylighting, thereby affecting indoor environmental conditions (Anumah & Anumah, 2017). The National Building Code and Building Energy Efficiency Code for Nigeria recognize the importance of appropriate building performance, environmental comfort and energy efficiency (Federal Ministry of Power, Works and Housing, 2016a, 2016b). However, the existence of standards does not necessarily guarantee satisfactory residential experiences because actual satisfaction also depends on how occupants perceive and use their environments.

Federal University of Agriculture, Zuru is an emerging higher-education institution whose growing student population creates a continuing need for adequate residential facilities (Sallau et al., 2024). Preliminary observations indicated that students depend on different forms of accommodation, including university-related facilities, private hostels, rented apartments and family residences. The variation in accommodation conditions raises questions concerning the adequacy of existing residential environments and the physical features students consider important. Issues reported by students include overcrowding, limited privacy, poor ventilation, irregular electricity supply, inadequate water, maintenance deficiencies and security concerns.

Although previous studies have examined student housing and residential satisfaction, limited attention has been given to the relationship between building forms, architectural elements and user satisfaction within emerging university environments in northwestern Nigeria. This study therefore examined students' satisfaction with their existing accommodation, identified the building forms and architectural elements they considered important, and determined preferred accommodation features. Because respondents lived in different accommodation types, the findings describe general student housing conditions in Zuru rather than the performance of specific hostel building forms. The study provides empirical evidence on the physical and functional characteristics that should receive attention in improving student accommodation in Zuru.

2 MATERIALS AND METHODS

This section presents the research approach, study area, population and sample and data analysis and synthesis used to examine student housing satisfaction and the perceived importance of building forms and architectural elements.

2.1 Research Approach

A mixed-method approach was adopted to obtain both quantitative and qualitative evidence on student residential experiences (Creswell & Creswell, 2023). A post-occupancy perspective was also adopted because the study focused on users' experiences and evaluations of residential environments (Preiser et al., 2015). A single questionnaire was administered to students irrespective of where they lived, so respondents in university hostels, private hostels, rented apartments and family residences are analysed together.

2.2 Study Area

The study was undertaken in Zuru, Kebbi State, Nigeria, using Federal University of Agriculture, Zuru as the institutional context (Agro-Climatic Resilience in Semi-Arid Landscapes [ACReSAL], 2023). Zuru Local Government Area lies in southeastern Kebbi State and is characterized by relatively undulating terrain, elevated areas and distinctive physical landscapes (Figure 1). The area covers approximately 653 km², with elevations reaching about 350 m in some locations. The climate is tropical continental, with a wet season occurring mainly from April to October and a dry season extending approximately from November to February (Obadijah et al., 2020). Mean temperatures are reported to reach about 38°C

in April and approximately 31°C in January (Sallau et al., 2024). These conditions make environmental considerations such as natural ventilation, daylighting, shading and outdoor spaces relevant to student accommodation.

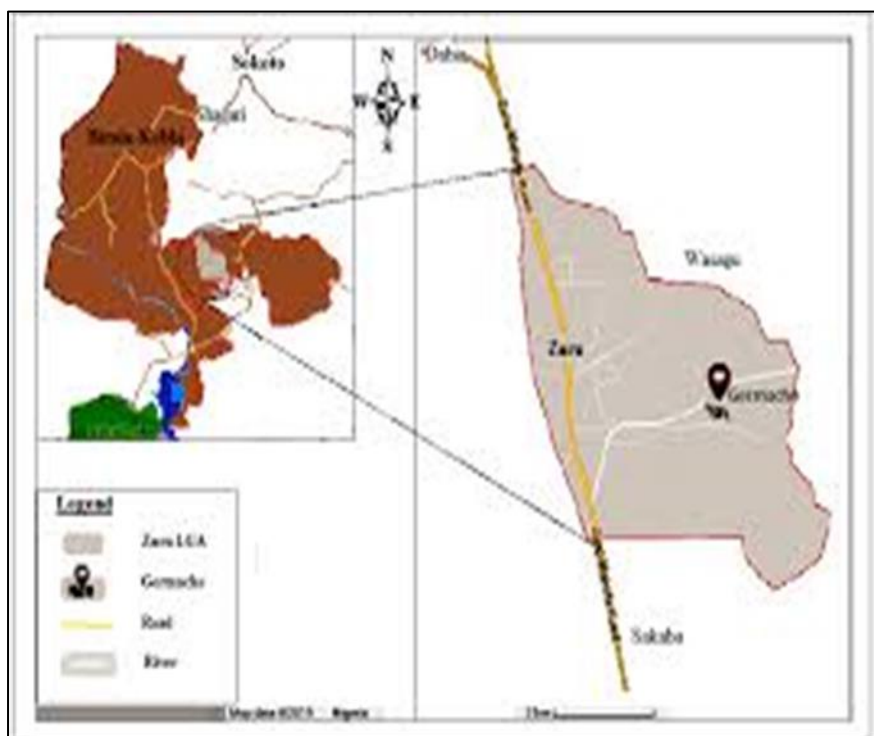


Figure 1: Map of Zuru, Kebbi State, Nigeria

Source: ACRoSAL (2023).

2.3 Population and Sample

The study population comprised 1,136 undergraduate students enrolled at FUAZ during the 2024/2025 academic session. The population comprised 529 students from the College of Science, 521 from the College of Agriculture and 86 from the College of Veterinary Medicine.

The sample size was determined using Taro Yamane's (1967) formula:

$$n = N / [1 + N (e)^2] \quad \text{Equation 1}$$

Where:

n = sample size

N = population size (1,136)

e = margin of error (typically 0.05 for 95% confidence level)

$$n = 1,136 / [1 + 1,136(0.05)^2]$$

$$n = 1,136 / [1 + 1,136(0.0025)]$$

$$n = 1,136 / (3.84)$$

$$n \approx 295.83$$

$$n = 296$$

2.4 Data Analysis and Synthesis

Quantitative data were analysed using frequencies, percentages, mean scores and standard deviations. Qualitative responses were grouped into recurring themes, and thematically similar categories were merged before frequencies and percentages were calculated (Saunders et al., 2019). Satisfaction was measured on a five-point scale ranging from 1 = very dissatisfied to 5 = very satisfied. Mean scores from 1.00–1.49 were interpreted as very dissatisfied, 1.50–2.49 as dissatisfied, 2.50–3.49 as neutral, 3.50–4.49 as satisfied and 4.50–5.00 as very satisfied. Similar five-point scales were used to assess the perceived importance of building forms and architectural elements and preferences for accommodation features. The analysis was descriptive, and results were not disaggregated by accommodation type.

3 RESULTS AND DISCUSSION

This section presents and discusses the findings on student housing satisfaction and the perceived importance of building forms and architectural elements in Zuru, Nigeria.

3.1 Respondents' Characteristics

The 194 respondents comprised 99 males and 95 females. Most respondents were aged 18–25 years (76.3%), while 22.2% were aged 26–40 years. The majority were single (95.4%). Students from the College of Science constituted 57.2% of the respondents, followed by Agriculture (27.8%) and Veterinary Medicine (14.4%). Reported accommodation types included university hostels (28.9%), private hostels (14.4%), rented apartments (31.4%) and family residences (24.2%) (Table 1). Because 55.7% of respondents lived in rented apartments or family residences, the results in Sections 3.2 to 3.4 describe general student housing conditions and not hostel-specific building forms. Most respondents had lived in their current accommodation for between one and two years.

Table 1: Characteristics of Respondents (n = 194)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	99	51.0
	Female	95	49.0
Age	18–25 years	148	76.3
	26–40 years	43	22.2
	Not stated	3	1.5
Marital Status	Single	185	95.4
	Other/not stated	9	4.6
College/Faculty	Science	111	57.2
	Agriculture	54	27.8
	Veterinary Medicine	28	14.4
	Not stated	1	0.5
Accommodation Type	University hostel	56	28.9
	Private hostel	28	14.4
	Rented apartment	61	31.4
	Family residence	47	24.2
	Not stated	2	1.0

Source: Field Survey (2026). Percentages are of n = 194 and may not sum to 100 because of rounding.

3.2 Satisfaction with Existing Accommodation

The 194 valid responses indicated generally neutral satisfaction across the eleven assessed accommodation variables and the overall rating. Mean scores ranged from 2.72 to 3.21. Accessibility and ease of movement recorded the highest satisfaction score (3.21), followed by cleanliness and maintenance (3.11), while circulation recorded the lowest (2.72) (Table 2). Overall satisfaction was 2.94. The neutral overall assessment indicates that students neither considered their accommodation clearly satisfactory nor strongly unsatisfactory. This supports the multidimensional nature of residential satisfaction identified by Mridha (2023) and Saleem and Alchalabi (2025). The low rating of circulation is

particularly relevant because movement and spatial relationships influence the functionality of residential environments (Hillier, 1996).

Table 2: Students' Satisfaction with Existing Accommodation

Variable	Mean	SD	Interpretation
Room size	2.94	1.33	Neutral
Privacy	3.03	1.34	Neutral
Accessibility/ease of movement	3.21	1.26	Neutral
Security/safety	3.02	1.34	Neutral
Circulation	2.72	1.27	Neutral
Toilet/bathroom facilities	2.84	1.27	Neutral
Study environment	2.98	1.32	Neutral
Common/social spaces	2.96	1.29	Neutral
Appearance	2.89	1.35	Neutral
Cleanliness/maintenance	3.11	1.29	Neutral
Outdoor recreation	2.84	1.29	Neutral
Overall satisfaction	2.94	1.39	Neutral

Source: Field Survey (2026).

3.3 Important Building Forms and Architectural Elements

Students rated all fourteen assessed variables as important, with mean scores between 3.82 and 4.01. Adequate room arrangement ranked first (4.01), followed by natural ventilation (4.00), accessible circulation (3.99), outdoor seating (3.97) and natural lighting (3.96). Courtyard form recorded a mean of 3.95. The results demonstrate that students place considerable importance on spatial organization and environmental conditions (Table 3). The high rating of natural ventilation is consistent with the climatic conditions of Zuru and with the importance of building orientation and environmental response in hot climates (Anumah & Anumah, 2017; Nicol & Humphreys, 2002). The strong rating for courtyard form also suggests that students value spatial arrangements that provide shared outdoor areas and opportunities for interaction. These are perceived-importance ratings from the pooled sample and were not tested against the form of the buildings respondents actually occupy.

Table 3: Importance of Building Forms and Architectural Elements

Variable	Mean	SD	Rank
Adequate room arrangement	4.01	1.00	1
Natural ventilation	4.00	0.95	2
Accessible circulation	3.99	0.93	3
Outdoor seating	3.97	0.93	4
Natural lighting	3.96	1.00	5
Courtyard form	3.95	1.00	6
Study areas	3.92	0.98	7
Security	3.91	0.93	8
Landscaping	3.91	1.01	9
Cluster form	3.91	0.96	10
Well-organized corridors	3.86	0.92	11
Linear form	3.86	1.10	12

Recreational spaces	3.83	1.04	13
Common rooms	3.82	0.98	14

Source: Field Survey (2026).

3.4 Preferred Accommodation Features and Reported Challenges

Outdoor relaxation spaces (3.99), dedicated study rooms (3.94), indoor recreation (3.92), landscaped courtyards (3.91) and universal accessibility (3.91) were the highest-rated preferred features. Single occupancy also recorded a high mean score of 3.88 (Table 4). The open-ended responses identified irregular or inadequate electricity supply as the most frequent challenge, followed by overcrowding, limited space/privacy and poor ventilation. Students' recommendations were dominated by single rooms, better utility provision, improved security and courtyard layouts. These responses reinforce the quantitative findings by showing that students' expectations centre on adequate personal space, environmental quality, security and opportunities for academic, social and recreational activities.

Table 4: Preferred Accommodation Features

Feature	Mean	SD	Rank
Outdoor relaxation spaces	3.99	0.92	1
Dedicated study rooms	3.94	0.99	2
Indoor recreation	3.92	1.02	3
Landscaped courtyards	3.91	1.03	4
Universal accessibility	3.91	1.00	5
Courtyard-centred layout	3.89	1.03	6
Single occupancy	3.88	1.03	7
Controlled access/security	3.88	1.05	8
Double occupancy	3.85	1.01	9
Common lounges	3.83	1.02	10

Source: Field Survey (2026).

Table 5 shows that irregular or inadequate electricity supply (24.7%) was the most frequently identified challenge, followed by overcrowding and limited space/privacy (17.5% each) and poor ventilation (16.0%). The prominence of poor ventilation corresponds with the high rating assigned to natural ventilation in Table 3. The findings therefore show consistency between students' reported problems and the physical attributes they considered important.

Table 5: Major Accommodation Challenges

Challenge	Frequency	Percentage (%)
Irregular or inadequate electricity supply	48	24.7
Overcrowding	34	17.5
Limited space/privacy	34	17.5
Poor ventilation	31	16.0
Lack of water	23	11.9
Poor maintenance	14	7.2
Security concerns	10	5.2

Source: Field Survey (2026). Percentages are of n = 194. Electricity items were merged into one category.

Table 6 shows that reliable electricity and water supply (24.2%) and study areas (23.7%) were the most frequently identified facilities, followed by security (22.2%). This reinforces the importance of accommodating academic activities within the residential environment. The strong emphasis on security also confirms that personal safety is an important dimension of students' residential expectations.

Table 6: Facilities Considered Important by Students

Facility	Frequency	Percentage (%)
Reliable electricity/water supply	47	24.2
Study areas	46	23.7
Security	43	22.2
Clean facilities and toilets/bathrooms	39	20.1
Recreation	19	9.8

Source: Field Survey (2026). Percentages are of n = 194. Overlapping electricity/water and cleanliness categories were merged.

Single rooms recorded the highest frequency (24.9%), followed by better utilities (23.8%), improved security (22.3%) and courtyard layouts (21.8%) (Table 7). The preference for single rooms reflects concerns about overcrowding and privacy. The preference for courtyard layouts corresponds with the high importance score assigned to courtyard form. Natural ventilation was also identified among the recommendations, reinforcing its importance in the quantitative results.

Table 7: Recommendations for Improved Accommodation

Recommendation	Frequency	Percentage (%)
Single rooms	48	24.9
Better/reliable utilities (electricity, water)	46	23.8
Improved security and security systems	43	22.3
Courtyard layout	42	21.8
Natural ventilation	14	7.3

Source: Field Survey (2026). Percentages are of the 193 coded responses. Overlapping security and utility categories were merged.

4 DISCUSSION OF FINDINGS

The findings show that students' satisfaction with existing accommodation was generally neutral, while the physical characteristics they considered important received consistently high ratings. This suggests a gap between students' existing residential experience and their preferred accommodation conditions. Room arrangement, ventilation, accessibility, lighting and outdoor spaces were particularly important.

The findings also demonstrate the relevance of balancing private and shared spaces. Students expressed concerns about overcrowding and privacy but simultaneously preferred courtyards, outdoor relaxation areas, study spaces and recreational facilities. Residential accommodation should therefore provide an appropriate combination of personal space and shared facilities. This supports the multidimensional understanding of residential satisfaction reported by Ibem et al. (2017), Emami and Sadeghlou (2021) and Mridha (2023).

The importance attached to natural ventilation and lighting is particularly relevant to Zuru's climatic conditions. Similarly, the strong preference for accessible circulation and security indicates that functional movement and personal safety are integral to students' residential expectations. Overall, the results show that user satisfaction is influenced by the combined effects of spatial organization, environmental quality, privacy, accessibility, security and social facilities rather than by building form alone.

This study has limitations. Respondents from all four accommodation types were pooled, so the mean scores describe general student housing conditions and cannot be attributed to hostel building forms. The analysis was descriptive and did not include cross-tabulation, analysis of variance or regression, and no architectural drawings, microclimate measurements or spatial-syntax analyses were undertaken. Future research should survey hostel residents separately, document the surveyed buildings through measured drawings and compare satisfaction across building forms using inferential statistics.

5 CONCLUSION

The study examined student housing satisfaction and the perceived importance of building forms and architectural elements in Zuru, Nigeria. Students reported generally neutral satisfaction with existing accommodation, while adequate room arrangement, natural ventilation, accessible circulation, natural lighting and outdoor spaces were considered highly important. Courtyard form was also strongly rated. The findings indicate that improved student accommodation should respond simultaneously to spatial, environmental, social and functional requirements. Particular attention should be given to overcrowding, privacy, ventilation, circulation, security, study facilities and recreational opportunities. The study suggests that user perceptions provide an important basis for understanding the characteristics required for satisfactory student residential environments in emerging universities, although hostel-specific conclusions require disaggregated data.

Recommendations

Based on the findings, four achievable recommendations are proposed:

- Existing student accommodation should be reorganized where possible to reduce overcrowding, improve room layouts and provide greater privacy. Single-occupancy rooms should be prioritized where space and resources permit.
- Windows, openings and circulation routes should be kept functional and unobstructed, while measures such as improved cross-ventilation and clearer movement routes should be implemented in existing accommodation.
- Available spaces should be adapted for shaded outdoor seating, landscaped courtyards and dedicated study areas to support relaxation, interaction and academic activities.
- Priority should be given to reliable water and electricity supply, routine maintenance, controlled access and adequate lighting around student accommodation.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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The authors declare no conflicts of interest regarding this manuscript.

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