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Perceptual Analysis of Student Housing Financial Performance in Nigeria: A Causal Linkage Study

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Abstract Many institutions are no longer able to provide sufficient housing for their student on-campus. The housing deficit has caused the students to migrate to off-campus student housing. This study examined the factors influencing the financial performance of student housing in Nigeria, with a specific focus on studentified neighbourhoods in Calabar and Ile-Ife. The study adopted a quantitative research design, utilising a closed-ended questionnaire administered to property managers across 132 student housing units. Data collected were analysed using Principal Component Analysis (PCA) to identify key factor groupings influencing financial performance. The results reveal four major components that drive financial performance in student housing: Institutional and Property-Specific Factors; Locational and Socio-Economic Factors; Regulatory and Financial Factors; and Macroeconomic and Infrastructure Factors. The primary factor influencing the financial performance of student housing is institutional and property-specific factors, with a total variance of (54.986%). The study concludes that both micro-level property features and macro-level environmental conditions influence the financial viability of student housing investments in Nigeria.

Index Terms Housing, Student Housing, Performance, Studentified Neighbourhood, Nigeria.

I. Introduction

The world has shifted attention towards a knowledge-based economy. This is reflected in the enrolment rates of students in tertiary institutions of learning. An ideal situation in Nigeria shows that the tertiary education sector has experienced rapid growth, characterised by the proliferation of these higher institutions of learning. Currently, the country houses 62 Federal-owned universities, 63 State-owned universities, and 149 private universities [1]. Additionally, there are 188 polytechnics, 232 mono-technics [2], and 183 colleges of education [3], as well as other specialised tertiary institutions of learning.

The tertiary institutions usually provide student housing as part of their social responsibility. This is important because student housing are educational support buildings that provide accommodation and convenience to students in proximity to tertiary institutions [4], [5]. Presently, due to the increase in student population, there has been a strain on existing student housing facilities provided by the tertiary institutions. As a result, many tertiary institutions leave a considerable number of students without on-campus housing options. Research indicates that over 60% of students in African tertiary institutions are accommodated off-campus [6]. This trend has attracted the attention of stakeholders such as real estate investors regarding student accommodation in tertiary institutions. Many stakeholders have had to complement government efforts, either in partnering with the government or by solely providing privately developed student housing facilities "on or off" campus [7], [8], [9]. Off-campus student housing such as Purpose-Built Student Accommodation (PBSA), emerged as a strategic solution to address this student housing shortfall. Off-campus student housing is a multi-single-unit accommodation for students in tertiary institutions of learning. It comprises specific property types such as PBSA, House-in-Multiple Occupation (HMO), cluster flats, and modern dormitories with ensuite bedrooms, shared-kitchen/bathroom facilities, dinner and living space [10], [11].

In view of the above, student housing has now emerged as a distinct property asset class due to its unique characteristics such as purpose-designed facilities, predictable rental cycles, location-specific features, recession resilience, among others [12], [13], [14]. Owing to this, many public and private investments in the student housing market have surged to meet the growing demands of the student population, and the proliferation of tertiary institutions. However, the market for student housing operates differently from conventional property markets as specific investment fundamentals influence its performance such as supportive structural demand and supply metrics [15], relatively high investment returns [12], and lower volatility rates [16]. As a result, researches on student housing have been a subject of scholarly investigation in the field of real estate investment, as seen in studies conducted by [6], [17], and [18]. Specifically, researches on student housing have primarily focused on two thematic areas: factors influencing investors' participation in providing student housing [11], [19], [20], and the demand and

supply dynamics of student housing [21], [22]. However, data highlights that studies examining factors influencing the financial performance of student housing appear scarce in the literature; hence, the need to focus on this aspect. This is because financial performance is a critical metric in evaluating the success and sustainability of any investment, as it reflects the ability of an asset to generate returns over time [18]. It encompasses indicators such as profitability, cash flow, return on investment, and operational efficiency [23], all of which are essential for informed decision-making by investors, developers, and stakeholders.

Therefore, this study aims to address this gap by analysing factors influencing the financial performance of student housing in both Calabar and Ife, Nigeria. Calabar and Ife attract a large and diverse student population from various parts of the country, leading to a consistent increase in student enrolment over the years. As a result, the available on-campus housing provided by these tertiary institutions have become grossly inadequate, pushing a significant proportion of students to seek accommodation off-campus.

Consequently, the paper is structured such that; Section two (2) is the literature review, followed by research method in section three (3), findings and discussion in section four (4), and section five (5) which is the conclusion.

II. Literature Review

In the context of real estate, particularly student housing, financial performance determines the attractiveness and viability of the asset class in competitive markets [11]. Sound financial performance not only assures investors of potential returns but also influences future investment flows, financing opportunities, and long-term growth strategies. However, achieving and sustaining strong financial performance in student housing depends on a range of factors that vary across locations and market conditions, as evidenced by several empirical studies.

A glimpse of factors affecting the financial performance of student housing encompasses the confluence of driving and inhibiting factors. A study conducted in Gaborone, Botswana by [19] to examine factors influencing property investors' minimum participation in the provision of student housing revealed factors such as limitations in multisectoral users' approaches, monocentric site-location, lack of partnership between developers and tertiary institutions, high maintenance and renovation costs as major factors inhibiting the financial performance of student housing. Also, literature has emerged that offers contradictory findings about factors influencing this housing performance. For instance, [20] in Sydney listed high demand, and low vacancy rates as financial drivers of student housing performance. This study's findings are in consonant with those conducted in European countries by [24] whose study revealed a yield premium that justifies the perceived risk. In Malaysia, [21] identified increased student population, proliferation of tertiary institutions, population growth, the location of these tertiary institutions, and the recessionary economic situation as factors influencing the financial performance of student housing. Location in terms of distance to campus is to student residents. The major advantage of student housing is that it offers a walking distance to campuses [25]. [26] noted the presence of high-ranking universities in cities as been viewed as an indicator of high property value.

A quantitative study conducted by [5] evaluates the marginal effect of student housing proximity to campus using hedonic regression model and mean distribution in analysing six tertiary institutions' student housing market. The study's findings show a non-linear relationship between rent and distance from campus. However, the findings of previous studies such as [27], [28] have acknowledged a positive impact of location on the financial performance of real estate investment. Significantly, [29] noted that tertiary institutions with large campuses, lower acceptance rates, and enrolment, located in rural areas tend to have a negative impact on privately developed student housing.

In the local context of this debate, however, in a wider perspective, [30], and [31] identified several factors affecting the financial performance of real estate investment. These factors were building size, type of structure, quality of facilities provided, neighbourhood attributes, structural characteristics, demand, and general economic conditions. Consistent with these findings, [32] noted that investment in off-campus student housing strongly correlates with the student population, which in turn drives high occupancy rates and enhances its financial performance [33]. The agglomeration of student housing investment is closely tied to students' enrolment in tertiary institutions [12]. and its viability is ultimately a function of students' demand [32]. However, the financial performance of student housing is also influenced by other factors, such as the state of infrastructure and security in studentified neighbourhoods [7], [5]. Students perceive the value of their housing as a determinant of the facilities present. This means that student housing providers would have unique requirements and determinants that will constitute critical quality factors that students expect [34]. Various factors, such as transport facilities, electricity, water, and neighbourhood characteristics shape students' preferences for housing. Furthermore, the monocentric location of student housing can make it vulnerable to crime, which affects student residents' safety and the perceived value of properties [35].

III. Research Method

The research adopted a quantitative approach. The population for this study were the student housing unit's property managers in the studentified neighbourhood of Calabar and Ile-Ife. These locations were selected because of the expansion of off-campus student housing developments, offering a rich context for analysis and enabling the study to capture a broader perspective on the financial dimensions of student housing across different regional and economic settings. The property managers were

selected because they are the best target population to provide detailed information on the factors influencing the financial performance of SH-units. Primary data was sourced through a census sampling approach using closed-ended multiple-choice questions on factors that drive and inhibit the financial performance of student housing. Census sampling was used because the target population is small and highly accessible, leading to high accuracy and generalizability of the findings. The sampling frame for this study comprised 92 student housing units in Calabar and 81 in Ile-Ife's, making a total of 173 student housing.

Table 1: Number of SH Units Available in the Study Area

Studentified Neighbourhood	Number of SH-Units	Percentage (%)
Calabar	92	53.18
Ile-Ife	81	46.82
Total	173	100.00

The data presented in Table 1 shows the available number of student housing-units in the studentified neighbourhood of Calabar and Ile-Ife. The SH-units in the Calabar studentified neighbourhood account for 53.18%, while that of Ile-Ife had the total of 46.82% of the total SH-units stock in the study area. The study area has a total of 173 student housing, and this constitutes the sample size for this study.

III. A. Number of Student Housing Units Surveyed

The study collected data through paper-based questionnaire administered on each student housing unit property manager. The total number of student housing-units surveyed is therefore reported in Table below:

Table 2: Number of SH Units Surveyed out of the Available SH in the Study Area

Studentified Neighbourhood	Number of SH-Units surveyed	Percentage (%)
Calabar	73	55.30
Ile-Ife	59	44.70
Total	132	100.00

Presented in Table 2 is the information on the total number of SH-units surveyed as against the total SH-units available in the study area. 92 and 81 questionnaires were administered to the student housing property managers in Calabar and Ile-Ife respectively, but only 73 and 59 were retrieved. The researchers intended to cover all the SH-units in the study areas, however, some SH property managers declined to fill-in the questionnaire. The information presented in Table shows that 79.35% of the total SH-units in Calabar were surveyed, while 72.84% of the student housing in Ile-Ife were surveyed.

III. B. Method of Data Collection / Data Analysis

This study utilized a closed-ended paper-based questionnaire. Factor analysis was employed to analyse the data collected. Factor analysis is a statistical method used in data analysis to explore and understand the underlying structure, patterns, and relationships among a set of observed variables (Shrestha, 2021). It identifies common factors that drive the correlations between observed variables, simplifying data by reducing the number of dimensions. This method assumes that observed variables are influenced by one or more common factors, which are not directly observed but inferred from patterns of correlations or covariances between observed variables. Hence, Principal Component Analysis (PCA) was used.

IV. Results and Discussion of Findings

This section shows the analysis of the data obtained from the questionnaire administered to the respondents and the discussion of findings.

Table 3 shows the background information of the study's respondents reflecting their demographic and professional profiles. The respondents were drawn from two locations in Nigeria: Calabar, Cross River State (53.30%) and Ile-Ife, Osun State (44.70%), representing a well-distributed geographic sample where there is an emerging student housing market. In terms of educational qualifications, the majority of the respondents (65.91%) had a Bachelor's degree (B.Tech/B.Sc), while a smaller percentage had either an Ordinary or Higher National Diploma (19.70%), or a Master's degree (14.39%). This indicates that most respondents possess at least an undergraduate education, suggesting a strong academic foundation for evaluating factors influencing student housing financial performance. Again, the distribution of professional designations shows that estate surveyors and Valuers comprised the largest group (73.48%), followed by lawyers (18.18%) and facility managers (6.07%), with a minor representation from other professions (2.27%). The predominance of estate surveyors and valuers suggests that the study's insights are largely informed by experts with direct involvement in property valuation and management services.

Regarding practical experience, the respondents exhibited varying levels of expertise in property management, with the majority (43.18%) having between 16-20 years of experience, followed by those with 11-15 years (31.82%) and 6-10 years (15.91%). Only a small fraction (2.27%) had 1-5 years of experience, indicating that most respondents possess substantial

Table 3: Profile of Respondents

Background Information of Respondents	Parameter	Frequency	Percentage
Location of the Respondents	Calabar (Cross River State)	73	55.30
	Ife-Ife, (Osun State)	59	44.70
	Total	132	100.00
Highest academic qualification	OND/HND	26	19.70
	B.Tech/B.Sc	87	65.91
	M.Tech/M.Sc	19	14.39
	Total	132	100.00
Designation of Respondents	Estate Surveyors	97	73.48
	Lawyers	24	18.18
	Facility Managers	8	6.07
	Others	3	2.27
	Total	132	100.00
Years of Property Management Experience	1-5 years	3	2.27
	6-10 years	21	15.91
	11-15 years	42	31.82
	16-20 years	57	43.18
	21-25 years	9	6.82
	Total	132	100.00
Professional Membership of Respondents	Probationers	2	1.51
	Associate Members	83	62.88
	Fellow	14	10.61
	Other	33	25.00
	Total	132	100.00

industry exposure. Additionally, professional membership status highlights the respondents' expertise, as 62.88% were associate members of the Nigeria Institutions of Estate Surveyors and Valuers, while 10.61% were fellows, denoting a high level of professional attainment. Meanwhile, 26.51% fell under the "other" category.

Table 4: Shows the KMO and Bartlett's Test of Factors Influencing the Financial Performance of Student Housing

Measure	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.915
Bartlett's Test of Sphericity	
Approx. Chi-Square	3625.039
df	465
Sig.	.000

In order to explore the attributes of those factors influencing the financial performance of student housing in Nigeria, factor analysis was carried out to classify these factors into groups for ease of describing them. To determine how suitable the data collected are, the value of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is often used which ranges from 0 to 1. The closer the KMO value to 1, the more suitable the data set for factor analysis and vice versa [?]. Table 4 shows the KMO value for this study as 0.915 which indicate a strong shared variance among the variables suggesting the suitability of the data for factor extraction. Bartlett's Test of Sphericity provides further confirmation. The test yields an approximate chi-square value of 3625.039, with 465 degrees of freedom and p-value ($p < 0.05$) revealing that a factor analysis is worthwhile for the data set. Hence, the hypothesis that the correlation matrix is an identity matrix is rejected.

From Table 5, the communalities of the factors were assumed to be 1.000 before extraction. However, after the extraction, the communalities show the shared variance within the data structure. The highest level of common communalities is the nearness of these students housing to tertiary institutions(s) (0.828), while the lowest level of common communalities is Neighbourhood characteristics (0.587) after the extraction. The thirty-one (31) variables had their communality values greater than 0.5. Therefore, all the variable were retained and were all considered fit for factor analysis.

The extraction method of factor analysis used in this study is Principal Component Analysis. Before extraction, thirty-one linear items were identified within the dataset. After extraction and rotation, there are four distinct linear components in the dataset for eigenvalues > 1. From the analysis in Table 6, four (4) groups of influencing factors (components) explained a total of 69.788% of the variance. Therefore, four components were identified. The components had Initial Eigen Values of 54.986%, 6.279%, 4.43%, and 4.093%, respectively, before rotation. After rotation, the four factors, i.e., components 1, 2, 3, and 4 explained 19.202%, 17.564%, 16.855%, and 16.166% of the total variance, respectively. This shows that four major components explain the factors influencing the financial performance of student housing in the study area. To consolidate this, further analysis was done using a scree plot as presented in Figure 1 below:

Figure 1 was used to check the important components to be retained. The scree plot is suitable when an elbow shape is formed and the points on the upper elbow are considered the important components. The scree plot above shows a clear steep

Table 5: Communalities of Factors Influencing the Financial Performance of Student Housing

Items	Initial	Extraction
The proliferation of tertiary institutions	1	0.61
The reputation of these tertiary institutions	1	0.614
Variation in students' income class	1	0.811
Increased students' enrolment/population into tertiary institutions	1	0.678
The inability of tertiary institutions to provide sufficient hostel accommodation for their students	1	0.688
The nearness of these students housing to tertiary institutions(s)	1	0.823
Reliable lease term	1	0.688
Resilience against market downturn	1	0.723
The architectural design of students' housing properties	1	0.788
Inbuilt modern amenities and facilities	1	0.63
Availability of technological amenities (e.g., Wi-Fi, CCTV, etc)	1	0.654
Less competitive properties in the vicinity	1	0.705
Rental rate in the local market	1	0.698
Age and condition of the property	1	0.663
The quality of property management/services provided	1	0.73
Low operational and maintenance costs associated with students' housing	1	0.779
Neighbourhood characteristics	1	0.587
Level of infrastructure development in the studentified neighbourhood	1	0.646
Zoning and land use regulation	1	0.695
Government taxes	1	0.624
Local economic conditions	1	0.749
Socio-cultural factors	1	0.675
Financing options used in developing the said students' housing	1	0.674
Location of student housing outside studentified neighbourhood	1	0.663
Substitute properties in the market	1	0.759
Tertiary institutions strike	1	0.663
High cost of services e.g. (electricity/water bills)	1	0.698
Higher rate in students' rental defaults	1	0.803
High rate of repairs and maintenance	1	0.71
Hike in student school fees	1	0.685
Lack of access to public amenities/services	1	0.719

Extraction Method: Principal Component Analysis.

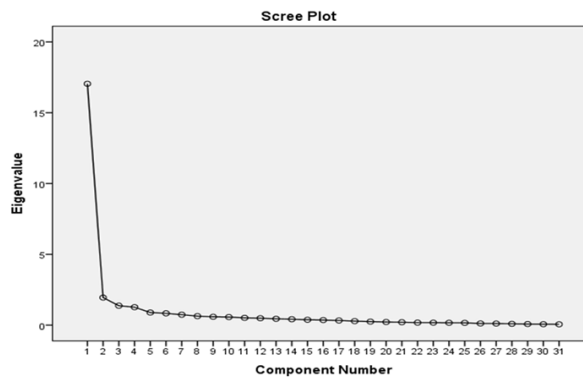


Figure 1: Scree plot showing the ideal number of components to retain

at the fifth factor, indicating that the first four factors explained the majority of the variance in the data. Therefore, the four components earlier considered were retained as additional factors did not significantly improve the explanation of variance.

Table 7 specified the Rotated Component Matrix for the level of relevance of factors influencing the financial performance of student housing in Nigeria. The Table accounts for factor loadings of thirty-one (31) variables factored into four (4) component using Principal Component Analysis extraction method. While adopting Varimax with Kaiser Normalization as the rotation method, the absolute value / cut-off point of 0.50 was adopted in order to suppress variables with small coefficient, this resulted in 26 variables having values above 0.50. The outcome of the analysis produced four (4) component factors. The four components as extracted in Table 7 were named accordingly. The first component was named *Institutional and Property-Specific Factors* with seven (7) loading items with loading values ranging from 0.738 – 0.504. Items loading under this component included :increased students' enrolment/population into tertiary institutions, age and condition of the property, high cost of services e.g., electricity/water bills, lack of access to public amenities/services, proliferation of tertiary institutions, the reputation of these tertiary institutions, and rental rate in the local market. The second component was named *Locational and*

Table 6: Shows the Eigenvalues and Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.046	54.986	54.986	17.046	54.986	54.986	5.953	19.202	19.202
2	1.946	6.279	61.265	1.946	6.279	61.265	5.445	17.564	36.766
3	1.373	4.43	65.695	1.373	4.43	65.695	5.225	16.855	53.621
4	1.269	4.093	69.788	1.269	4.093	69.788	5.012	16.166	69.788
5	0.89	2.872	72.66						
6	0.834	2.69	75.35						
7	0.738	2.382	77.732						
8	0.636	2.051	79.783						
9	0.591	1.906	81.689						
10	0.571	1.842	83.531						
11	0.516	1.665	85.195						
12	0.49	1.58	86.775						
13	0.45	1.451	88.226						
14	0.417	1.345	89.571						
15	0.378	1.221	90.792						
16	0.358	1.156	91.947						
17	0.328	1.058	93.005						
18	0.284	0.916	93.921						
19	0.249	0.804	94.726						
20	0.221	0.712	95.438						
21	0.205	0.66	96.098						
22	0.178	0.575	96.673						
23	0.175	0.564	97.238						
24	0.166	0.536	97.774						
25	0.161	0.521	98.294						
26	0.12	0.387	98.681						
27	0.111	0.359	99.04						
28	0.094	0.305	99.345						
29	0.077	0.247	99.592						
30	0.066	0.214	99.806						
31	0.06	0.194	100						

Extraction Method: Principal Component Analysis.

Socio-Economic Factors with seven (7) loading items having their loading value between 0.835-0.545. Factors within this component are variation in students’ income class, the nearness of these students’ housing to tertiary institutions(s), resilience against market downturn, the architectural design of students’ housing properties, socio-cultural factors, the inability of tertiary institutions to provide sufficient hostel accommodation for their students, and the quality of property management/services provided.

Again, the third component having six (6) items which are higher rate in students’ rental defaults, location of student housing outside stidentified neighbourhood, high rate of repairs and maintenance, zoning and land use regulation, hike in student school fees, and tertiary institutions strike was termed *Regulatory and Financial Factors*, having its items’ value ranges from 0.838-0.557, while the fourth component was term *Macroeconomic and Infrastructure Factors*. Items in the fourth components were substitute properties in the market, local economic conditions, government taxes, level of infrastructure development in the studentified neighbourhood, availability of technological amenities (e.g., Wi-Fi, CCTV, etc), and financing options used in developing the said students’ housing.

V. Conclusion

This study investigated the factors influencing the financial performance of student housing in Nigeria, using empirical data from Calabar and Ile-Ife. As student housing becomes an increasingly viable investment class amid growing enrolment and infrastructural gaps, understanding its financial drivers is essential. However, this research remains significantly under-researched. This study grouped the factors influencing the financial performance of student housing into institutional and property-specific factor, locational and socio-economic factor, regulatory and financial factor, and macroeconomic and infrastructural factor. A combination of these factors influences the financial performance of student housing. Institutional and property-specific factor (54.986%) is the major factor influencing the financial performance of student housing. These findings demonstrate that financial performance is shaped not only by internal property characteristics and proximity to campus but also by broader structural and economic dynamics. The results provide a critical framework for investors, developers, and policymakers aiming to enhance the sustainability and profitability of student housing.

The research recommends that student housing investors should carry out extensive and detailed market research to determine the enrolment trends, and high-demand areas before embarking on the investment. Investors should also invest in solid

Table 7: Rotated Component Matrix^a of Factors Influencing the Financial Performance of Student Housing

Variables	Component			
	1	2	3	4
<i>Institutional and Property-Specific Factors</i>				
Increased students' enrolment/population into tertiary institutions	.738			
Age and condition of the property	.730			
High cost of services e.g., electricity/water bills)	.726			
Lack of access to public amenities/services	.583			
The proliferation of tertiary institutions	.572			
The reputation of these tertiary institutions	.544			
Rental rate in the local market	.504			
<i>Locational and Socio-Economic Factors</i>				
Variation in students' income class		.835		
The nearness of these students' housing to tertiary institutions(s)		.759		
Resilience against market downturn		.708		
The architectural design of students' housing properties		.685		
Socio-cultural factors		.633		
The inability of tertiary institutions to provide sufficient hostel accommodation for their students		.594		
The quality of property management/services provided		.545		
<i>Regulatory and Financial Factors</i>				
Higher rate in students' rental defaults			.838	
Location of student housing outside stidentified neighbourhood			.707	
High rate of repairs and maintenance			.682	
Zoning and land use regulation			.597	
Hike in student school fees			.585	
Tertiary institutions strike			.557	
<i>Macroeconomic and Infrastructure Factors</i>				
Substitute properties in the market				.763
Local economic conditions				.747
Government taxes				.609
Level of infrastructure development in the studentified neighbourhood				.559
Availability of technological amenities (e.g., Wi-Fi, CCTV, etc)				.536
Financing options used in developing the said students' housing				.513

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

^a Rotation converged in 8 iterations.

property management services to ensure regular maintenance and increase profitability. Institutions should explore public-private partnerships (PPP) and ways to generate funding to expand the number of on-campus hostels and renovate existing ones. By offering new empirical insights into an underexplored area of real estate investment in Nigeria, the study lays a foundation for further academic inquiry and evidence-based decision-making in the student accommodation sector. This study focused on two public universities, other studies can explore a comparative study between public and private institutions.

Conflicts of Interest

The authors declared that they have no conflict of interest regarding this work.

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