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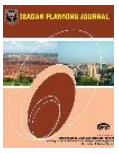

Comparative Study of the On- and Off-Campus Students' Hostel in Federal Universities in Southwestern Nigeria

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Abstract

Students' on- and off-campus hostel accommodation in Nigerian Federal universities is presently experiencing deficiencies in quality and quantity and it is already well-documented in the literature. A significant gap in the literature is the lack of comparative studies between the on- and off-campus hostel accommodation in these universities. This is a gap the present study set out to fill, by adopting housing habitability indicators to measure the level of defects in students' hostels in the selected Federal universities in southwestern Nigeria. The survey design technique was adopted for the study. A probability proportion to size sampling technique was used to select 1207 students and 193 hostels. Five housing habitability indicators (foundation, flooring, wall, roof, and wall paint) were used to assess the level of defect in the students' hostels, and a hypothesis on significant differences was tested. The study revealed that on-campus hostels scored better than off-campus hostels regarding the indicators used. Observed variations in the hostels' housing was found to be statistically significant, using the two-tailed Mann-Whitney U test, based on an alpha value of 0.05 (foundation: U = 2,437.500, z= 2.006, p = .045; flooring: U = 2,757.000,z = 3.149, p = .002; wall: U =2,528,000, z = 2.152, p = .031; roof: U = 2,454,000, z = 2.071, p = .038 and paint: U = 1,587.000, z = -2.131, p = .033). The study revealed that off-campus hostels had higher levels of defect than on-campus hostels; 75.28% of the students preferred on-campus to off-campus hostel accommodation; absence of adequate monitoring of off-campus hostels, absence of planned and corrective maintenance practice, and the government's lukewarm attitude towards providing adequate on-campus accommodation were identified as the major contributing factors to inadequate on-campus hostels accommodation in the Federal Universities. The introduction of adequate standardization and monitoring of the off-campus hostels and the adoption of comprehensive proactive planned provision and maintenance of on-campus hostel accommodation in the Federal Universities were recommended strategies to ensure habitable students' hostel accommodation.

Keywords
Student hotel, Housing habitability, On-campus hostel; Off-campus hostel; Federal University

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1. Introduction

By all standards, adequate housing is beyond shelter, and its process must be comfortable and safe. The draft National Housing Policy (FGN, 2006) defined housing as the process of providing many residential buildings permanently with adequate physical infrastructure and social services in planned, decent, safe, and sanitary neighbourhoods to meet the essential and unique needs of the population. Regarding adequacy, global housing units are known to be inadequate, deficient, and lagging and probably need an adjustment (Emmanuel, 2019). However, housing supports human health, economic development, social interaction, and several other elements of human well-being (Mbazor, 2018). Housing and its condition concern urban planners, though little or no improvement has recently been seen despite countless policy formulations. Sanni (2018) highlighted the intervention of the Federal Government to construct 59,000 and 202,000 dwelling units during the nation's second and third National Development Plans; and observed that, at the end of the plan periods, only 12.0% and 15.0% of the target were constructed, respectively.

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According to the 1991 National Housing Policy, 700,000 housing units must be provided annually to compensate for the deficit. Housing shortfall is still a global and national concern to date. From a simple economics study, it can be concluded that the limited housing supply makes the available ones overburdened and then uncomfortable for the occupants

Consequently, student housing in Nigerian universities is similarly limited and has witnessed several policy interventions to salvage the current situation (Olanrewaju S, Garba G. & Onigbogi O., 2022). Aigbavboa (2015) asserts that student housing has long been regarded as an essential component of the facilities provided by institutions of higher learning in assisting students to expand their intellectual capabilities. Kobuea, Oke, and Aigbavboa (2017) observe that being accommodated in a comfortable, safe, well-managed residence is socially and academically advantageous for students. Therefore, the provision of properly maintained student housing should be a priority for any university.

The bone of contention is that the physical conditions of most hostels, which this study also refers to as the 'physical building conditions' in Nigerian universities, are not congruent with students' academic pursuits and are at their worst decline. The building condition survey assesses the physical condition of a building or group of buildings. It thoroughly inspects the building's structure, systems, and components, such as the roof, walls, floors, and other relevant features. The survey typically identified defects that must be addressed and areas that require maintenance or upgrade. Olanrewaju, *et al* (2022) observe that hostels in Nigerian universities are poorly maintained as no organized plan exists for their maintenance. Most of the maintenance done in the institutions is usually carried out after the students must have been discomforted to the point of protest. The quality of the students' hostel is not unconnected to their level of academic performance.

In typology, this study categorized the student hostels in tertiary educational institutions into four, which are Formal Bed Spaces (FBS) owned and operated by the university; public-private participation (PPP); organized private (OP) housing built off-campus; and private houses (Zubairu & Noralfishah, 2016; Adelowokan, 2024). The first two are on-campus, while the last two are off-campus. The four types of student hostels have varied defects and could have diverse effects on students' comfort. Defining comfort in these hostels has been challenging, however, its explanation does not connote generalizations. It varies from culture to culture and from person to person. Students' accommodation comfort implies the acceptable physical state of students' housing and the condition of the social and physical environment where the building is located to meet the occupant's expectations and well-being (Omole, 2001; Krieger & Higgins, 2002; Bonnefoy, 2007; Thontteh, 2014). Unfortunately, Nigeria's housing stock, especially student housing, is substandard, barely meeting the minimum requirements for shelter and refuge and having a relatively low habitability level (Metzger, 2018; Osinbajo, 2022).

Researchers have established the contributions of comfortable student housing to the quality of the higher education system and students' well-being (Krieger & Higgins, 2002; Mbazor, 2018). This makes students' accommodation pivotal as it could have a long-term effect on individuals and society. The on- and off-campus accommodations will likely impact students' comfort differently. Therefore, this study explored variations in the students' housing conditions in both on- and off-campus with their level of comfort.

Thus, this paper seeks to assess the physical condition of the students' hostels and compare the hostels in the two locations and the level of comfort of the occupants. Thus, the hypothesis that there is no significant difference in students' housing defects in the on- and off-campus hostels was made and tested in this study.

2. Literature Review and Conceptual Framework

A building, according to Douglas (1996) and Wahida R.N, Milton G., Hamadan N., Lah N. M. I. B. N., & Mohammed A. H., (2012), has three primary functions related to space: shelter, safety, and privacy for the occupiers. When and if these functions cannot enhance the quality of living of the occupiers, then such buildings will draw the wrong signal in terms of efficiency. The condition of a building does not remain the same after it has been built: it is subjected to wear and tear, which can also be categorized under external and internal factors. The external factor represents the outdoor environment, while the latter represents the physical structure that requires maintenance for maximum efficiency of the building (Wahida *et al*., 2012). All buildings must be maintained to reduce deterioration (Arditi & Nawakorowit 1999). So, having a plan for building maintenance is not out of order irrespective of their age.

The land uses that host aged buildings for an average of 50 years are mostly found in religious institutions, and heritage sites followed by educational institutions, and most educational buildings in Nigeria are in deplorable conditions due to lack of adequate maintenance (Ogunoh E,

Mbanusi E.C., & Okoye P, 2018). In the study of Younis et al. (2020), old houses (constructions more than 50 years old) were a significant risk factor for Visceral Leishmaniasis (VL) as the age of the building is linked to other factors such as having cracks in walls/floors, infested roofs, and walls, and uneven-humped floors. In a similar study by Haryati *et al*. (2016), university building defects were related to floor tile cracks, detached skirting, corroded windows, damaged doors, fungus, and stain marks. Bortolini and Forcada (2018) found that cracking and water leakage are the most common defects for building elements, while leakage and corrosion were more often found in plumbing systems. One building defect often leads to another (Faqih *et al*, 2020). Nur *et al*. (2015) in their study found that moisture problem in a hospital building has a cascading effect and lead to several other building defects such as peeling paint, blistering of wallpaper, staining, discoloration, watermarks, mold growth, corrosion on different building elements such as roof, wall, ceiling, and floors.

The final intention of building defects, especially when no adequate action is taken early, is total collapse. The rate at which some completed/uncompleted structures failed has become a significant concern. Statistics indicate that over 461 buildings collapsed in Nigeria between 1974 and July 2021, resulting in over 1,090 recorded fatalities and numerous injuries (Gbonegun & Olorunlomeru, 2021). Statistics from Okunola (2021) show that from 2005 to 2020, "at least 152 buildings have collapsed" in Lagos, with 76.6 percent of such buildings being purely residential. This calls for close attention to student hostels in tertiary institutions essentially designed for residential purposes, mainly because the housing facilities usually accommodate multiple occupants (students) and are old, in terms of year of construction. Year-in, year-out, building collapse is a recurring phenomenon in Nigeria, resulting in loss of lives and billions of naira in investments. Investigations by Okunola (2021), and other scholars, have revealed that some of these building failures are the result of a lack of adequate maintenance, using substandard building materials, lack of adequate monitoring by government officials before and during construction, corruption, failure to follow approved designs, skipping a thorough subsoil investigation to determine appropriate foundation to apply, converting or altering existing structures illegally, and hiring quacks or inexperienced builders.

The building is a composite of interconnected parts, and a detailed assessment of it is better done in segments: the foundation, floor, wall, stairs, roof, and paints among others. The review of existing literature reveals that the majority of scholars often focus on discussing only the foundation of the building without giving adequate attention to the other parts of the building. For example, although Inseun (2016) emphasizes the importance of the foundation in supporting the link between the building and the ground, he fails to emphasize the effects of the movement of the foundation leading to the appearance of cracks in walls, and floors, and other defects in structural buildings. Ron (2019) highlighted eight common signs of foundation damage: crack, settling, upheaval, doors that stick or don't open and close properly, gaps around window frames or exterior doors, damp crawl space in a pier and beam house, and sagging or uneven floors.

It can be deduced that the effect of foundation failure can be seen on the floor and the wall which can be displayed in the peeling of wall paint. The results of previous studies indicate that although defects across different spaces in buildings are similar, they may have different effects on occupants' comfort. Thus, the importance of housing conditions to the occupants' comfort has gained increasing attention (WHO, 2018) and has resulted in designating the 10th of October every year as "The International Day of Homelessness" and "The World Mental Health Day".

3. Theoretical Framework

3.1 Building Maintenance and Students' Comforts in Residential Apartments

The concept was originally used in the military sector during the World War II. Its importance makes it relevant in other sectors, such as the building industry. Ogunor *et al*. (2018) define building maintenance as the synthesis of technical and administrative duties that allow the structure and all of its parts to continue performing their distinctive roles for the duration of their service life. It refers to a framework for making decisions on the upkeep of structures over their lifetimes.

The overall objective of building maintenance management is to minimize the chances of failures, prolong the life expectance of the building, and boost the occupant's comfort. Without regular maintenance, buildings deteriorate fast and are more likely to cause discomfort to the users.

The building maintenance management comprises of the four stages: planning, organizing, directing, and controlling which is presented in Figure 1. Planning implies deciding what type of maintenance work to be done in the building, how it is to be done, who to do it, and at what cost, time, and materials required. Planning assists maintenance managers in developing maintenance objectives for organizations and determining how to achieve them. It guides managers on how to obtain and commit the

resources required for maintenance activities, and carry on these activities consistent with the laid down procedures. It also enables managers to monitor and measure the progress of maintenance so that corrective action can be taken if progress is unsatisfactory. This means that the building maintenance objectives/criteria developed in this perspective support the fulfillment of the institutional maintenance strategic objectives.

Secondly, organizing is the process of organizing human and material resources, which includes staffing, purchasing materials, securing funds, and other logistics for maintenance activities. Developing a communication flow among the workers that allow tasks to be accomplished easily. This process of establishing worker relationships allows workers to work together to achieve the institutional goal.

Directing is a system in which the maintenance head influences and motivates workers to achieve institutional objectives. This usually requires the staff, especially those in charge of maintenance activities to be trained. Thus, involving skills, competency development, frequency of training, and adequate support for effectiveness. This stage ensures that every member of the maintenance unit is expert in his/her respective area of profession for maintenance to work. There will not be an excuse for maintenance delays as workers are inspired to work as expected.

Lastly, controlling is the process by which the director of the maintenance unit keeps things on track by ensuring that standards are attained, measuring current performance, and taking corrective action to ensure that there is improved quality of work. This is the interface where the students (end-users) and the staff of the maintenance unit meet for feedback and a feedforward approach for quality assurance.

Cash constructed a model in 1993 to illustrate some potential components that affect the building quality and, in consequence, the behavior and academic performance of students (Ogunoh *et al*., 2018). Cash goes on to say that administration and finances have an impact on maintenance, which in turn affects the performance and conditions of school buildings; and that parents, instructors, and students' attitudes are influenced by the building environment. Academic performance and student behaviour are both impacted by the state of tertiary institutional facilities. Fig. 1 depicts the Cash (1993) model as illustrated by Ogunoh (2018).

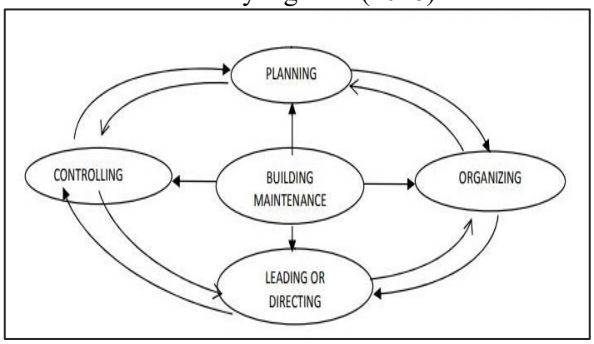

Figure 1: Building Maintenance Management Model
Source: Cash, 1993

The factors included in Cash's (1993) model offer proof that this model is crucial for maintaining educational facilities. Nevertheless, the model's variable set is limited. It did not consider the student-inclusiveness as end-users in the process, feedback, management decisions, and maintenance staff. However, the model is relevant to this study.

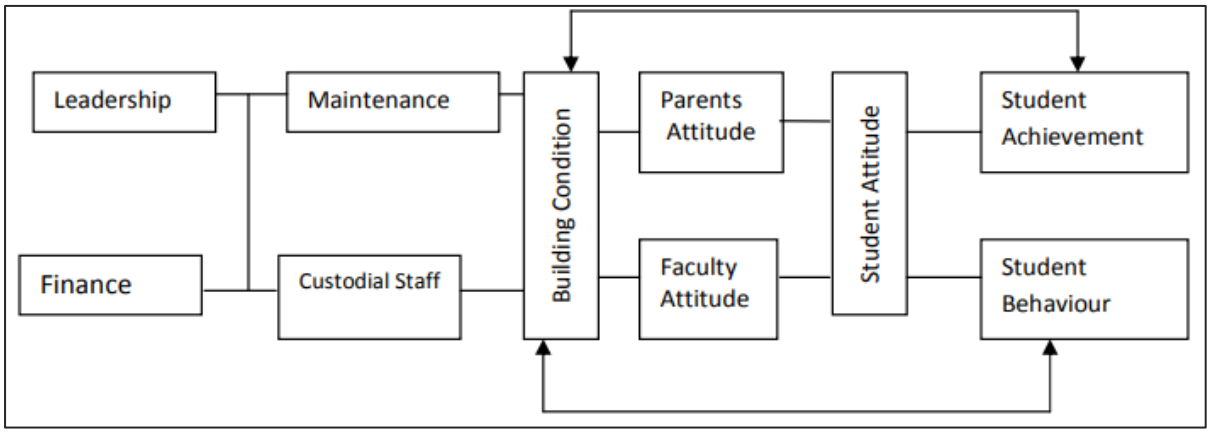

Figure 2: Adapted from Cash's Model of the relationship between building condition and student achievement

3.2 Comfort in Student's Residential Apartment

The dwelling that serves as a place of comfort for students can likewise be a dynasty of discomfort if adequate maintenance is not in place. According to Silva and Santos (2010), comfort consists of different attributes organized into physical and subjective dimensions. The first is linked to the most primitive yearnings of man, while the second is related to something difficult to measure but essential to the sensation of well-being. The two

dimensions always operate interconnectedly, one supporting the other. The attributes they used to measure the physical dimension are safety, efficiency, and environmental adjustment, while the subjective attributes are territory, home, privacy, and beauty. The combination of the two is embedded in the comfort of the student hostels.

In this case, particular attention is paid to how the maintenance process can be student-inclusive. It emphasizes how the administration, technicians, and end users can meet to understand what has been and what is expected of a building facility to boost the comfort level of the students in their hostels. This is assumed as a way of boosting the students' comfort while in their academic pursuits in universities. It was also discovered that most of the time, the technician designed and implemented the system without the involvement of the end-users (the students).

The two major methods of maintenance are proactive and reactive. The proactive method involves a routine of check-ups before a defect is observed. The reactive type of maintenance is like an emergency response to breakdowns or defects. In most cases, responses are not immediate and it may lead to crises most of the time. The way to know the best strategy to adopt is to look at the loss when a building fails. If the cost is less than the repair cost, then a reactive maintenance method may be ideal for your building. On the other hand, if the costs are higher in the event of a building failure, then a proactive maintenance method might be more beneficial. There is no value cost to the lives of the students if trapped in a building collapse and the proactive method will be ideal for student hostels to prevent collapse. This justifies the need why the building conditions, students' comfort, and academic achievement are important factors to consider presently.

4. Materials and Methods

The study area is Southwestern Nigeria comprising Lagos, Oyo, Osun, Ogun, Ondo, and Ekiti States, which covers an area of approximately 77,818km^2 and represents about 10% of the nation's landmass (Faleyimu & Oyebade, 2012). This land size makes it bigger than Austria, Ireland, and many African countries. The southwest region of Nigeria has an estimated GDP of about N67 trillion naira (about $305 billion US dollars), more than half of the nation's GDP (Olajide, 2016). Also, the GDP of southwestern Nigeria shows that the region is more significant than all the economies of Africa except Egypt, Angola, Algeria, South Africa, and Morocco. Based on the 2006 population census, the region's population is about 28 million, representing 21% of the country's population. Its population makes it bigger than Portugal and Romania; it is bigger than the Netherlands, Ghana, Cameroun, and many African countries (Olajide, 2016). The region also has a vibrant history of educational advancement. The region was the first to start free education in the country. The Southwestern region housed the first University in Nigeria, the University of Ibadan which was established in 1948.

Out of the six geopolitical regions in the country, southwestern Nigeria emerges as the region with Federal universities with the highest number of student enrollment in the country. It has the lowest unemployment and poverty rate, according to the National Bureau of Statistics (NBS) Abridge Labour Force Survey under COVID-19 (Popoola N. Okechukwu N., Joseph O., & Temiloluwa O.P. 2021). By 2014 estimates, the Southwest region was the third largest economy in Africa.

Both primary and secondary data were obtained for the study. The primary data were obtained through the administration of a structured questionnaire and observational checklist to classify the different categories of building defects (Table 1). The classifications of defects were modeled along the analysis in the existing literature (Wahida, *et.al.,* 2012; Plebankiewicz and Malara, 2020). In line with these studies, the present study adopted four levels of building defects, which are: 'no defect', 'low defect', 'moderate defect', and 'severe defect'. The operational definitions for the four classifications are as follows:

1. '*No Defect'* condition. This is a preferable condition that the building should be at any time because of the application of proactive maintenance.
2. *The 'low Defect'* is a minor defect that does not hinder the operation of the building. This term is used by the authors to describe damage that has a visual or cosmetic effect, that does not influence the functional properties of the premises. The removal of these defects does not generate the necessity of using any advanced technology.
3. *The 'Moderate Defect'* is significant. They do not constitute a direct threat to the health and life of the occupants. They do not force the cessation of use because they do not constitute a direct threat to the health and life of the occupants. Due to the large dispersion of the types of these defects, it is not possible to determine the degree of technical and technological complexity of their removal. Examples include the following: decaying tiles on the balcony, unsealing of window and balcony joinery, slow main door locks, etc.
4. *The 'Severe Defects'* are critical and not safe for the occupants. Repair works are associated with large financial and material outlays and are time-

consuming. Examples of very important defects include cracking of physical elements or leakage of the roof sheathing.

There are six conventional Federal universities in the southwestern region, out of which three (50%) were randomly selected. These are The University of Ibadan, the University of Lagos, and Obafemi Awolowo University, Ile-Ife. The target population is the total number of registered undergraduates in each of the selected universities. Available records by the Academic Planning Units and Audit/Budget unit of the selected universities revealed that the breakdown of registered students in 2020/2021 is as follows: University of Ibadan (UI), 24,497; University of Lagos (UNILAG), 63,847 and Obafemi Awolowo University (OAU), 32,401; making a total of 120,745 students. These students reside in the 51 on-campus and 142 off-campus purpose-built hostels within the students' areas. The areas of study include UI: (Agbowo, Bodija, Orogun Barika, Sango, and Ojoo), Unilag (Akoka, Bariga, Ebute-meta, Gbagada, Sabo, Iwaya, Iyana-iworo, and Jibowu) and OAU (Damiko, Lagere, Parakin, Mayfair, Seven-day, Asherifa, and Maintenance).

A probability proportion to size sampling technique was used to select 1,207 students representing one percent of the total student population in the sampled universities, while 193 purpose-built residential houses for students within and around the various university campuses, depicting on- and off-campus students' accommodation, were randomly selected for physical assessment. The choice of the respondents was based on the intention to obtain information directly from the hostels' end-users which are the students and other stakeholders. To this end, the administration of the questionnaire, and physical evaluation of the residential building via the building checklist was carried out simultaneously.

Table 1: Signs of Physical Condition of Building

S/No	Structural Component	No Defect	Low Defect < 5mm	Moderate Defect (5-15mm)	Severe Defect
1	Foundation	No Crack from Foundation	Angular cracks	Damp & Upheaval	Sinking, lintel cracks, wall crack from foundation to roof, settlement
2	Walls	No Crack	Angular crack	Cracks, Mouldy, Damp wall & Tilting	Cracks from interior to exterior wall; lintel crack, cracking, bulging.
3	Slab	No damage	Removed screed, delamination, Dusting, Honeycomb	Efflorescent, Rust, Bunghole Cracks, Joint separation	Reinforcement exposure and major damage
4	Roof	Neat paint, No sagging	Change in colour	Rusting & minor sagging	Rust, leaky, sagging and removal
5	Paint	New	Old	Pealing	Totally removed or none

Sources: National Building Code, (2006); ICC (2012); Ron (2019)

5. Empirical Findings

5.1 The Students' Hostel Alternatives and Their Physical Condition

The physical condition of the students' hostel or building is the focus of this section. The variables used in analysing this objective include the building foundation, flooring, walls, slab, paints, and roofing variables. To do justice to this, all the residences of the students were identified and reclassified.

Six alternative accommodations available to the respondents are formal bed spaces (FBS) in Halls of Residence provided by the university administration, squatting with friends, boys-quarter attached to staff quarters, Public-Private Partnership (PPP) student housing, Organized Private (OP) housing off-campus, and private homes (i.e., general houses). The distribution of students in these alternative accommodations revealed that 57.0% are accommodated in FBS, 21.0% in Private/ indigenous/family houses, 11.0% in Organized Private hostels (off-campus), and 4.0% are accommodated in Public-Private Partnership (PPP) and boys-quarters (Table 2).

Table 2: Alternatives Students Accommodation in Federal Universities

S/No	Student Alternative Accommodation	Frequency	Percentage
1	FBS (On-Campus)	773	64
2	PPP, (On-Campus)	48	4
3	Organized Private (Off-Campus)	133	11
4	Private Houses (Off-Campus)	253	21
	Total	**1207**	**100**

Although the wardens and supervisors informed, during the key-informant interviews, that there is officially strongly disallowed squatting in halls of residence, squatters account for 7.0 percent of the sampled students. The Landlords and agents of off-campus student housing, also disallow squatting or

overcrowding because of the negative attitude of students toward housing maintenance and sanitation. For this study, student accommodation was classified into four types: Formal Bed Space (FBS), Public Private Partnership (PPP), Organized Private (OP), and Private Homes (PH).

5.2 Physical Quality of the Students' Hostels

5.2.1 The Foundation

The foundation is known to be among the most important components of any building structure. In general, 70.5% of the hostels had no foundational defect, 25.4% had low damage (cracks in the walls' opening of less than 5mm), and 4.1% had moderate damage (with 5mm to 15mm wideness of crack which is enough for attention to prevent future danger). None of the hostels visited had severe foundation damage. The different defects that were witnessed during the survey include foundation upheaval, foundation settling or sinking (PQ%), and foundation crack (AB%). Due to desperation or other factors, students usually move into hostels without paying adequate attention to checking for housing defects. Hostels' foundational defects are usually the least in the minds of the majority of the students, though some of them might see the defects without comprehending their implications.

Table 3: Physical Condition of Hostel Foundation by Category

Structural Condition of Foundation			No Defect	Low Defect	Moderate Defect	Severe Defect	Total
On-Campus	FBS	Pop	26	9	1	0	36
		%	72.2	25.0	2.8	0.0	100
	PPP	Pop	22	2	0	0	24
		%	91.7	8.3	0.0	0.0	100
	Total	Pop	48	11	1	0	60
		%	80.0	18.3	1.7	0.0	100
Off-Campus	OP	Pop	54	25	5	0	84
		%	64.3	29.8	5.9	0.0	100
	PH	Pop	34	13	2	0	49
		%	69.4	26.5	4.1	0.0	100
	Total	Pop	88	38	7	0	133
		%	66.2	28.6	5.3	0.0	100
Total		Pop	136	49	8	0	193
		%	70.5	25.4	4.1	0.0	100

Source: Field survey, 2023

No signal of foundational defect was observed in 80.0% of the on-campus student hostels. This might be a result of multiple supervisions at the construction stage from the university management and Federal government. Also, the hostel providers within the on-campus have access to finance from the government and from commercial institutions at low or no interest rates which may have eased the procurement, maintenance, and construction funds. However, 28.6% and 5.3% of the off-campus hostels had low and moderate foundation defects respectively. Similarly, this can be attributed to little or no attention given to the students' hostels' foundations in the off-campus which can result in inferior construction in terms of quality material and then result in defects. Because of the above, the foundations of on-campus hostels were better in structure than those of the off-campus hostels.

5.2.2 The Condition of Students' Hostel Wall

Cracks in building walls are a common problem that can be caused by a variety of factors. The larger parts of the housing structure are the block walls which are made with different materials of varying qualities. The investigation of the walls across the public universities' students' hostels shows that 52.4% had no sign of major cracks on the wall. Although, there were no cracks, disjointed cracks with short lengths were observed. They are classified as no crack because they are surface (plastering) cracks and such cannot meaningfully affect the stability of the building. However, 38.3% and 9.3% of the student hostel walls had 'low' and 'moderate' defects respectively (Table 4). The low-damage cracks are less than 5mm in width while the cracks width of moderate damage is between 5mm to 15mm. These two types of cracks can cause partial building collapse which is presently prevalent in the building industry and this calls for corrective type of maintenance as quickly as possible.

Table 4: Physical Condition of Hostels' Walls by Category

Structural Condition of Foundation			No Defect	Low Defect	Moderate Defect	Severe Defect	Total
On-Campus	FBS	Pop	18	11	2	0	31
		%	58.1	35.5	6.4	0	100
	PPP	Pop	13	6	1	0	20
		%	65	30	5.0	0	100
	Total	Pop	31	17	3	0	51
		%	60.8	33.3	5.9	0	100
Off-Campus	OP	Pop	43	36	10	0	89
		%	48.3	40.5	11.2	0	100
	PH	Pop	27	21	5	0	53
		%	50.9	39.7	9.4	0	100
	Total	Pop	70	57	15	0	142
		%	49.3	40.1	10.6	0	100
Total		Pop	101	74	18	0	193
		%	52.4	38.3	9.3	0.0	100

Source: Field survey, 2023

Apart from bricks (91%), some of the students' rooms are partitioned with, Polyvinyl Chloride (6%) and other materials (3%) such as aluminum cladding, plywood, and cotton. Results from the interior wall condition and finishing of the students' hostel revealed that 59.0% were plastered and in good condition, 32.0% were plastered but already cracked. The cracks can be a result of natural condition, lack of maintenance, inferior building

materials, workers' inexperience, and age of the buildings. Apart from cracks, some additional signs noticed are dampness and pealing of the wall's plaster with paints. In addition, 6.0% of the students' hostel walls were tiled, and were in 'good condition 'while 3.0% were tiled but were in 'bad condition'. The firmness of the students' hostel walls can add to the stability of the entire building to prevent the structure from disintegrating.

5.2.3 The Condition of Wall's Paints

Investigations on external wall paints revealed that only 5.7% of the walls' paint was new and in good condition with no defect, while 27.5% that were painted were old, had low defects, and were gradually fading. Furthermore, 45.6% of the hostels' wall paints had faded or peeled already and some were pealing with the plastering. 27.5% of the walls were not painted at all. It was also discovered that many developers that built student hostels either on or off-campus let such hostels out without painting or repainting after the first paint had been applied many years. Faults in plumbing facilities and floors' retaining water are the major causes of the severe defects in wall paints.

Table 5: Physical Condition of Students' Hostel Paint by Category

Structural Condition of Foundation			No Defect	Low Defect	Moderate Defect	Severe Defect	Total
On-Campus	FBS	Pop	2	5	11	3	21
		%	9.5	23.8	52.4	14.3	100
	PPP	Pop	4	14	10	2	30
		%	13.3	46.7	33.3	6.7	100
	Total	Pop	6	19	21	5	51
		%	11.8	37.2	41.2	9.8	100
Off-Campus	OP	Pop	5	6	19	3	33
		%	15.2	18.2	57.6	9.0	100
	PH	Pop	-	16	48	45	109
		%	-	14.7	44.0	41.3	100
	Total	Pop	5	22	67	48	142
		%	3.5	15.5	47.2	33.8	100
Total		Pop	11	41	88	53	193
		%	5.7	21.2	45.6	27.5	100

Source: Field survey, 2023

5.2.4 The Physical Condition of Concrete Slabs and Beams

The slab is another major component of the multi-level buildings. The types of slabs referred to are the ones made with concrete for flat horizontal surfaces such as floors, roof decks, and ceilings. The types of slabs in the study area are usually 100mm (4 inches) to 150mm (6 inches) thick concrete mixed with iron rod reinforcement and most of the time supported by beams, columns, and walls. It complements the stability of the building. The two types of concrete slabs noticed were one-way slabs (46.0 percent) and two-way slabs (54.0 percent). The former is supported by a beam on two opposite sides while the latter, the most common, is supported by a beam on four sides. he majority (98.4%) of the students' hostel slabs were stable while 1.6% Were unstable slabs.

Table 6: Physical Condition of Students' Hostel Slab/Column by Category

Structural Condition of Foundation			No Defect	Low Defect	Moderate Defect	Severe Defect	Total
On-Campus	FBS	Pop	15	13	4	0	32
		%	46.9	40.6	12.5	0	100
	PPP	Pop	12	7	0	0	19
		%	63.2	36.8	0	0	100
	Total	Pop	27	20	4	0	51
		%	52.9	39.3	7.8	0	100
Off-Campus	OP	Pop	49	28	12	0	89
		%	55.1	31.4	13.5	0	100
	PH	Pop	24	18	11	0	53
		%	45.3	33.9	20.8	0	100
	Tota	Pop	73	46	23	0	142
		%	51.4	32.4	16.2	0	100
Total		Pop	100	66	27	0	193
		%	51.8	34.2	14.0	0	100

Source: Field survey, 2023

More than half (51.8%) of the slabs and beams had no damage, while 34.2% had low damage such as spalling of screed, scaling, and cracking. Also, 14.0% of the slabs showed signs of moderate damage among which were signs of efflorescent, scaling, and cracks. Such signs on concrete beams should be addressed promptly as they transfer load from the slab to the column and their failure can be disastrous. Some of these signs were noticed in the formal bed space (FBS) hostels that accommodate a large number of students. These may be attributed to old age building hostels as common in the on-campus, the lack of regular maintenance of plumbing faults, and the effect of weather on the buildings.

5.2.5 The Roofs Condition

From Table 7, it was revealed that 42.5 percent of the students' hostels had no roof defects, 39.4 percent had low defects, 17.1 percent had moderate defects, and the remaining (1.0 percent) had severe defects in the four alternatives of the students' hostels. The observed defects can affect the students' capacity to learn and assimilate and it can also increase the room temperature or make the rooms to be flooded during the rainy season. Invariably, a defective roof will eventually lead to a derelict ceiling, and the ceiling becomes soaked and colour changes. Roofs in57.5% of students' hostels are in different states of disrepair and need urgent attention. The situation of rust, faded colour, broken roof members, and punctures (i.e. holes) were noticed.

Table 7: Physical Condition of Students' Hostel Roof by Category

Structural Condition of Foundation			No Defect	Low Defect	Moderate Defect	Severe Defect	Total
On-Campus	FBS	Pop	11	14	7	0	32
		%	34.3	43.8	21.9	0	100
	PPP	Pop	11	7	0	1	19
		%	57.9	36.8	0	5.3	100
	Total	Pop	22	21	7	1	51
		%	43.1	41.2	13.7	2.0	100
Off-Campus	OP	Pop	39	35	13	1	88
		%	44.2	39.7	14.7	1.4	100
	PH	Pop	21	20	13	0	54
		%	38.9	37.0	24.1	0	100
	Total	Pop	60	55	26	1	142
		%	42.3	38.7	18.3	0.7	100
Total		Pop	82	76	33	2	193
		%	42.5	39.4	17.1	1.0	100

Source: Field survey, 2023

Similarly, it was observed that asbestos was used for ceilings in 77.8% of the students' hostels. Studies (Klerk and Alison, 2017) have revealed that the use of asbestos is dangerous for human health. The association between asbestos and health has gained relevant attention in society. Related studies and laboratory results of asbestos workers show that asbestos has negative effects on human health (Emmett, 2021). Exposure to breathing in asbestos fibers makes the students more vulnerable to contracting, several serious diseases like asbestosis, mesothelioma, and lung cancer. No amount of asbestos is considered safe and this is why it should be discouraged for students housing construction.

The null hypothesis that 'there is no significant difference in the level of students' hostel defect in the on and off-campus accommodation' was tested using the Independence Samples Mann Whitney U Test. The result of the two-tailed Mann-Whitney *U* test was significant for foundation, flooring, walls, roof, and paints based on an alpha value of 0.05, *U (foundation)* = 2,437.500, *z*= 2.006, *p* = .045; *U (flooring)* = 2,757.000,z = 3.149, p=.002; *U (wall)* =2,528.000, *z*= 2.152, *p*=.031; *U (roof)* = 2,454.000, *z*=2.071, *p*=.038 and *U (paint)* = 1,587.000, *z*=-2.131, p=.033. The mean ranks for the two groups are shown in table 8. The implication of this can be established from the mean difference in the level of defect where there is high damage in off-campus housing compared to on-campus housing. The table further presents the analysis of the standardized test statistics. The null hypothesis is rejected since five out of the seven variables were significant having a p-value less than alpha level 0.05. To complement the statistical result, observation from the survey showed that on-campus hostels are better in physical conditions than off-campus hostels.

Table 8: The distribution of condition of hostels across the categories (On and Off-Campus)

S/No	Variables	Mean Rank		*u*	*z*	*p*
		On-Campus	Off-Campus			
1	Foundation	99.42	79.94	2437.500	2.006	.045
2	Flooring	101.28	66.88	2751.000	3.149	.002
3	Walls	99.96	76.17	2528.000	2.152	.031
4	Stairs	97.48	93.60	2109.500	.348	.727
5	Slab	99.49	79.46	2449.000	1.813	.070
6	Roof	99.52	79.25	2454.000	2.071	.038
7	Paint	94.39	115.38	1587.000	-2.131	.033

Source: Field survey, 2023

Contrary to the above result, in the study of Ajala, *et. al* (2022) at the Federal University of Technology, Akure, (FUTA) it was concluded that the condition of students' hostels is not significantly different in both on-campus and off-campus hostels. This contradiction can be attributed to the variation of the study areas. The system of the students' accommodation in FUTA is completely different from the sampled universities for this present study.

5.2.6 Percentage of Observed Hostels' Damages Among Sampled Universities

The highest damages in hostels' foundations are observed in the University of Lagos (UNILAG) (41%) followed by the University of Ibadan (32.8%) and lastly Obafemi Awolowo University (17.6%). The observed high percentage in the University of Lagos can be attributed to the location of the university in damp land mostly reclaimed from the Lagoon and other water bodies terrain which makes the majority of the hostels exhibit signs of dampness at the foundation wall or the basement floor while many hostels experience groundwater seepage, especially during the rainy season. The flooring defect is common in UNILAG (60.7%), followed by UI (48.3), and the least in Obafemi Awolowo University (37.8%). The results can be attributed to different terrains of the sampled universities.

In terms of the condition of the walls, 67.2 percent of the hostels' walls in the UNILAG have vertical and horizontal cracks, 51.7 percent of the walls were cracked in the University of Ibadan, and 36.5 percent at Obafemi Awolowo University. In the same vein, 81 percent of the hostel's slabs at the

University of Lagos are presently undergoing spalling; corresponding percentages at the University of Ibadan, and the Obafemi Awolowo University, respectively, are 71% and 49%.

The percentage of roof damage in hostels is 64%, 62%, and 39%, respectively, at the University of Lagos, University of Ibadan, and Obafemi Awolowo University. The damages range from fading and opening of roofs, decay of facial boards, leaking of roofs, and sagging of ceilings. Lastly and generally, 98 percent of the walls' paints at the University of Ibadan are in a state of despair, while 100 percent of the walls at Obafemi Awolowo University, and the University of Lagos, need to be completely repainted (Figure 2). The overall ratings of the students hostel in the three universities in terms of hostel physical condition, rated the students' hostels in the Obafemi Awolowo University 'highest', and University of Lagos is rated least.

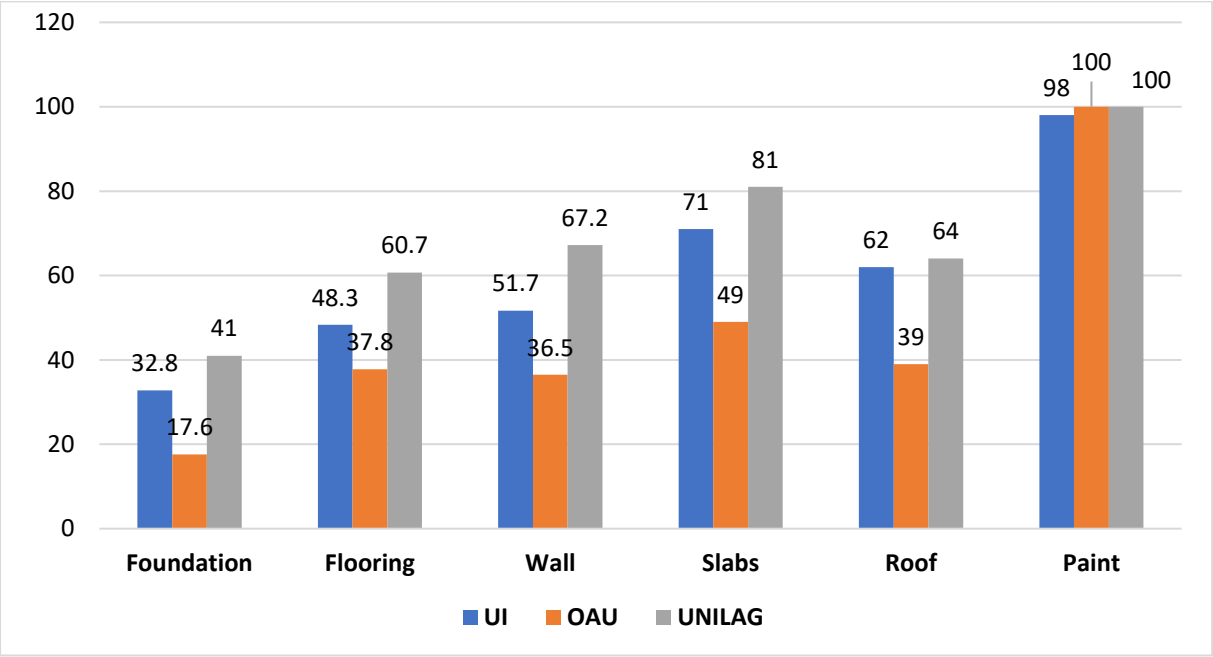

Figure 3: Percentage of damage in the hostels among the sampled universities

5.2.7 Relationship between Reported Defects and Respondents' Perceived Comfortability

Positive relationships have been established in the literature between building conditions and students' academic performance (Earthman, 2002 & Owolabi, 2015).

Table 9: Perceived Level of Comfortability of the Hostel

S/No	Comfortability level	Frequency	Percent
1	Very Uncomfortable	54	4.5
2	Uncomfortable	125	10.4
3	Rarely	314	26.0
4	Comfortable	476	39.4
5	Very Comfortable	238	19.7
	Total	1207	100.0

Source: Authors' Field Survey, 2023

Similarly, Wahida *et al*. (2012) affirm that a building without adequate maintenance and repair will discomfort the occupants. However, only 39.4% of the respondents were 'comfortable' with their hostel building condition, 19.7% were 'very comfortable', 26% were 'rarely comfortable' 10.4% were 'uncomfortable', and 4.5% were 'very uncomfortable' with their hostel building condition/ The different types of discomforts that the students experience may lead to emotional distress, increased heat, material spoilage, unsafety, and insect and reptile disturbance.

5.3.8 Students Perception of Hostel Maintenance in the On- and Off-Campus Hostels

Students' perception to good maintenance of the hostels was tested by a five-Likert scale, rated from 'strongly disagree' to 'strongly agree' using the notion: 'the hostel is poorly maintained'. The results of the investigations are presented in Table 10. 20.2% of the respondents 'strongly disagreed' that their hostel was poorly maintained, 17.2% 'disagreed',24.6% neither agreed nor disagreed, only 24.5% 'agreed' and 13.4% 'strongly agreed' with the suggestion that their hostels were poorly maintained.

Table 10: Students' Perception to Good Maintenance of Hostels

Good Hostel Maintenance		Hostel Location		Total
		On-Campus	Off-Campus	
Strongly Disagree	Count	155	89	244
	% within Hoste Location	20.7%	19.4%	20.2%
Disagree	Count	116	92	208
	% within Hoste Location	15.5%	20.1%	17.2%
Neither Agree nor Disagree	Count	188	109	297
	% within Hoste Location	25.1%	23.8%	24.6%
Agree	Count	191	105	296
	% within Hoste Location	25.5%	22.9%	24.5%
Strongly Agree	Count	99	63	162
	% within Hoste Location	13.2%	13.8%	13.4%
	Count	749	458	1207
	% within Hoste Location	100.0%	100.0%	100.0%

Source: Authors' Field Survey, 2023

6. Discussion

It was found that most of the off-campus buildings students resided in were converted buildings to accommodate students which was different from the initial use anticipated and planned for the buildings. The conversions were also done without the backing of the appropriate authorities in the Schools and the State. The outcome of this is the situation of improper management in charge of the buildings which makes adequate maintenance difficult or impossible. The study also discovered that most of the signals of defects on building walls are traceable to the foundation. This is common in the hostels at the University of Lagos, which could be attributed to the fact that Lagos is a flood-prone state which is characterized by relatively flat topography, a low-lying state, and is served by many rivers, as well as lagoons (Douglas, I., Alam, K., Maghenda, M., McDonnell, Y., McLean, L., & Campbell, J., 2008; Okunola, 2019). Consequently, buildings constructed in flood-prone areas are more likely to collapse (Jalonen, R., Ruponen, P., Weryk, M., Naar, H., & Vaher, S 2017).

During the investigation, it was discovered that many student residence roofs were neglected, showing signs of deterioration that result in moisture, colour changes, rust, and occasional leakages. Lastly, about all the sampled buildings require repainting as their building's walls paints have faded while many peeled.

The issue of peeling paint cut across the three sampled universities as a result of delayed attention to maintenance.

7. Conclusion and Recommendation

The study compared the level of defect of on- and off-campus students' residential apartments in selected Federal universities in Southwestern Nigeria. The results reflected that building defects were common signals in both on- and off-campus student hostels. The absence of proactive strategies for building maintenance was found to be the bane of poorly maintained hostels in these universities. It was, therefore, recommended that a proactive method of maintenance should be adopted in student hostels to ensure that the on- and off-campus student hostels live up to their expected role of providing maximum comfort for their occupants.

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