

# User Satisfaction of Sewerage Systems in University of Uyo Students' Hostels

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## Abstract

This study assessed students' satisfaction of sewerage systems and sanitary units in hostel accommodations in university of Uyo, Akwa Ibom State, Nigeria. The study utilized structured questionnaire to obtain primary data from students living in the hostels in Annex Campus. Four hostels were assessed, one male hostel and three female hostels. Simple random sampling was used to select the respondents. Data obtained were analyzed through the use of descriptive statistics such as frequency and sample means, to assess the general levels of students' satisfaction of the facilities. Analyses of the collected data showed that 59% of the respondents were of the opinion that potable water facilities were ineffective, while 41% opined that the facilities were fairly effective. Additionally, 58% of the respondents claimed that waste water facilities were fairly effective, while 42% claimed the facilities were ineffective. The study ultimately revealed that 29% of the respondents were fairly or moderately satisfied with the general conditions of sanitary facilities in University of Uyo Hostels, whereas 71% of the respondents claimed they were dissatisfied. To achieve a better user satisfaction, it is recommended that the University authorities consider the provision of adequate and quality sewerage facilities by replacement or repair of failing / failed components and hard wares.

**Key terms:** User satisfaction; Sewerage system; University of Uyo; Students' hostels

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## 1. Introduction

Students' housing constitutes part of the facilities that students take into consideration before making a choice of the school they intend to attend, among other considerations (Price et al., 2002). Unfortunately, several researches have shown that hostels in the Nigerian tertiary institutions are not measuring up to the needs of the students, due to the age of the hostel facilities, poor maintenance culture and the annual increase in students' population (Maiwada, 2011; Aigbiremolen et al., 2017; Ibanga, et al., 2020; Oladiran; 2013). Beside the hostel rooms where students sleep, an indispensable aspect of every student hostel is the sewerage system which encapsulates the sewers and the conveyed fluids. The sewerage system which is a part of the wastewater system, conveys used water (sewage or storm) from the hostel facilities, to anaerobic decomposition chambers or sewage treatment plants. In most cases, early fill-up and evacuation of the content of the septic tanks indicate a problem in the sanitary chambers. Frequent evacuation, thus, shows complete failure of the decomposition tanks and soakaway units. Thus, a sewerage system that does not perform its intended purpose could be said to have failed functionally and that would translate into end users' dissatisfaction.

Properly planned and developed sewerage systems in university hostels ensure proper water supply and sanitation, portable water guarantees quality food and good sewage system eliminates disease outbreaks and infections. It is sad to know that whenever it rains and the school environment is flooded, the dirty water that splashes on the body is not just storm water/rainwater, but, sometimes, a mixture of excrement released from the hostels' sanitary units. Wastes generated in the hostels are emptied into open spaces behind or beside the hostels, not only creating unsightly scenes, but constituting a health hazard. Failed taps and stop valves are seldom fixed on time and treated water keeps flowing for days, due to broken pipes. Students have to deep their hands in the cisterns to pull up the hooks in the flow masters, for water to flow into the water closets to flush excrement, due to broken handles of cisterns. Ironically, these facilities are referred to as convenience facilities, but how is walking on heels, dipping hands in cisterns to flush excrement, bathing and flushing with water in buckets convenient? These questions are set to be answered in the succeeding sections of this study.

## 2. Review of Past Literature

Globally, housing is recognized as one of the most critical necessities of human life and a major economic asset of every nation (Danso & Hammond, 2017; Akhimien et al., 2019). Quality housing provides the basis for social integration, stable communities, quality health and enabling milieu for students to learn (Alani, et al., 2010; Danso & Hammond, 2017, Anamali, et al., 2019). Accordingly, hostel accommodation is key to students' academic performance and achievements (Oladiran, 2013 & Ajala et al., 2022); but, persistent increase in the number of students has made it difficult for Nigerian governments at all levels, to provide for the

accommodation needs of students in tertiary institutions (Ajala et al., 2022). As both governments and individuals build hostel accommodations in and around tertiary institutions of Nigeria, the functionality of these facilities requires adherence to established maintenance policies and prompt response to maintenance exigencies. As noted by Ugwu et al. (2018), infrastructural development without proper maintenance leads to economic waste, structural instability and very low patronage. University hostels in Nigeria are designed to meet the accommodation requirements of the students; however, various factors have led to the poor performance of these hostels. The performance of these hostels influences the decision to rent the accommodation.

Some of the hostel accommodations are currently underperforming. This underperformance sometimes emanates even from the design of the hostel units. As posited by Oladiran (2013), most Nigerian University hostels had no laundry units; rather, open places were used for manual laundries. Further, study by Aigbiremolen et al. (2017) and Ibang, et al. (2020) concluded that hostel accommodations that are designed to enhance the general wellbeing of students, ended up in constituting a key vulnerability factor in terms of infections and spread of disease.

Musa et al. (2016) identified three key areas to be considered for an effective environmental sanitation; these included water supply, sanitation, and hygienic education. When wastewater systems of student hostels are poorly designed and executed, failure is not just imminent but swift.

Sewers are individual pipes used to assemble and convey waste or storm water; whereas, a network of sewers used to gather and transport wastewater or storm water from a building to a place of discharge or treatment is known as sewerage system (Maiwada, 2011). According to Ngien and Pian (2013), the effectiveness of any sewerage system is heavily dependent on the flow of wastewater and particularly, the peak flow factor, which is determined by the design criterion and the population equivalent (PE).

Research by Ajala et al. (2022) on “quality of students’ accommodation in Nigeria, case study of Federal University of Technology, Akure, (FUTA)”, revealed that though students considered several factors such as security, state of the accommodation, water and power supply, freedom, proximity to classrooms, among other factors, in their choice of university hostels, yet, the most considered factors were low hostel fees and good power supply. The study further established that the off-campus accommodations had more privacy and were less congested than the on-campus hostels.

Ugwu et al. (2018) assessed “building maintenance in Nigerian university system, case study of university of Nigeria, Nsukka”, and inferred that maintenance was not incorporated in the delivery of the building projects. The authors noted that most building project delivery methodologies majorly focused on planning, designing of the facilities, their construction, operation and use. Thus, the study established that the major factors militating against maintenance in tertiary institution included: lack of maintenance policies, paucity of funds for maintenance, corruption and misuse of facilities (Ugwu et al., 2018).

Azeez et al. (2016, p.1) carried out a “comparative assessment of students’ satisfaction with hostel accommodation in selected private universities in Ogun State, Nigeria” and established that though majority of the assessed hostels were spacious, but the poor conditions of the facilities, unsteady power and water supply, and infrequent waste disposal, were problems complained by the hostel users, with overcrowding as the most complained issue associated with the hostel accommodations.

Having noted some of the perennial problems of student accommodations in Nigeria, this study aims at assessing user satisfaction of sewerage systems in university of Uyo students’ hostels, in order to sensitize the university and the stakeholders on the state of the students’ hostels and the need for maintenance of the facilities.

## 2.1 Aim and Objectives of The Study

This study aimed at assessing user satisfaction of sewerage systems in university of Uyo hostel accommodations. The objectives of the research are:

1. To assess the effectiveness of potable water facilities in University of Uyo hostels.
2. To assess the effectiveness of wastewater sewers, fittings and fixtures in University of Uyo hostels.
3. To assess the level of students’ satisfaction of the sewerage systems in university

## 3. Methodology

The study utilized structured copies of a questionnaire to obtain primary data from students and university staff in the study area. Descriptive research was used for this study. It was used to assess the level of effectiveness, condition of facilities and end user satisfaction of sewerage systems in university of Uyo hostels. Sample means were used to determine the degree of students’ satisfaction with the sewerage systems in the University of Uyo hostel accommodations. The target respondents included students from 200 level to 500 level.

The questionnaire consisted of 4 sections, with a total of 57 question items and the respondents were required to choose from the list of supplied options. The questionnaire was made of the following sections:

**Section A:** Demographic data

**Section B:** Contains the level of effectiveness of portable and waste water systems in university of Uyo hostel

accommodations

**Section C:** Condition assessment of facilities.

**Section D:** End users' satisfaction assessment.

### 3.1 Area of Study

This study was conducted in the university of Uyo, annex campus. The campus is located in Uyo city and has three hostel buildings; one for males and the other two hostels for female students. Cooking is not allowed in hostels as it has resulted in fire outbreaks in the past. Hence, plumbing fittings and fixtures for kitchen are not considered in this study. University of Uyo is situated in the Central Business District (CBD) of Uyo metropolis, Akwa Ibom State. It was established in 1991 inheriting the facilities of the former University of Cross River State (UNICross). University of Uyo (UNIUYO) has multi-campus, Town Campus and Annex Campus along Ikpa Road in the CBD of Uyo Metropolis, Main Campus at Use Offot, along Nwaniba Road, a periphery of Uyo, and other campuses. Students living in hostel accommodations of the University of Uyo Annex campus constituted the study population. A random sampling technique method was used to select 150 respondents from the target population.

### 4.0 Results and Discussion

Analysis of data retrieved from respondents was carried out by entering the data into the computer using statistical package for social science (SPSS) version 25. The means, frequencies and percentages of each section of the research questionnaire were calculated and are then used for discussion of findings. The following mean ranges are used for the discussion of findings:

#### 4.1 Sample Mean Analysis

Mean 1-1.44 implies very ineffective, very poor and very dissatisfied.

Mean 1.45-2.44 implies ineffective, poor and dissatisfied.

Mean 2.45-3.44 implies fairly effective, fair and moderately satisfied.

Mean 3.45-4.44 implies effective, good and satisfied.

Mean 4.55-5.00 implies very effective, very good and very satisfied.

#### 4.2 Questionnaire Distribution Analysis

**Table 4.1: Questionnaire Distribution Analysis**

Description	Total number	Percentage (%)
Questionnaire Distributed	210	100
Questionnaire Returned	150	71

#### 4.3 Analysis of Demographic Data

**Table 4.2: Demographic Data**

CHARACTERISTICS OF RESPONDENTS		Frequency	Percentage (%)
sex	Male	91	60.7
	Female	59	39.3
	<b>Total</b>	<b>150</b>	<b>100</b>
Current level	Year2	58	38.7
	Year3	39	26.0
	Year4	31	20.7
	Year5	22	14.7
	<b>Total</b>	<b>150</b>	<b>100</b>
Duration on campus	1 session	67	44.7
	2 sessions	51	34
	3 sessions	24	16
	4 sessions	8	5.3
	<b>Total</b>	<b>150</b>	<b>100</b>

Table 4.2 shows that 91 (60.7%) were male students and 59 (39.3%) were female students, which shows that the study took into account the male and female hostels.

More so, the table shows that the respondents were students in year2, year3, year4 and year5 speaking of which 58 (38.7%) are in year 2; 39 (26.0%) in year 3; 31 (20.7%) are in year 4 and 22 (14.7%) are year 5 students. This means that the study was an all-inclusive one as the opinions were gathered from hostel dwellers who are aware of the state of these facilities and their level of functionality, hence their opinions could be relied upon.

The table further shows the duration the various categories have lived in the hostel: 67 (44.7%) of the respondents said they have been in the hostels for 1 session, 51 (34%) for 2 sessions, 24 (16%) for 3 sessions and 8 (5.3%) have lived in the hostels for 4 sessions, which further backs the reliability of the information they provided.

#### 4.4 Assessment of Portable Water Facilities in University of Uyo Hostel Accommodations.

Table 4.3 is a representation of findings on potable water facilities using the mean, in a descending order with an average mean of 2.26.

It can be seen from the table that the mean for the analysis of the effectiveness of taps heads, available cisterns and pipes supplying clean water to the facilities have mean values that fall within 2.45-3.44 mean range, which implies that these facilities are fairly effective.

Furthermore, evaluation of the shower heads, cistern handles, taps, wash hand basins and available showers shows that their means fall within the 1.45-2.44 mean range, which implies that these facilities are ineffective.

**Table 4.3: Assessment of Portable Water Facilities**

EFFECTIVENESS LEVEL OF PORTABLE WATER FACILITIES	No	Mean	Std. Deviation	Remarks
Effectiveness of taps heads	150	2.5	0.50168	FE
Effectiveness of available cisterns	150	2.46	0.67187	FE
Effectiveness of pipes supplying clean water to the facility	150	2.4533	0.56267	FE
Effectiveness of shower heads	150	2.26	0.83086	I
Effectiveness of cisterns handles	150	2.1467	0.83856	I
Effectiveness of taps	150	2.0933	0.8462	I
Effectiveness of wash hand basin	150	2.0867	0.80215	I
Effectiveness of available showers	150	2.08	0.7643	I
Average Mean		2.26		I

#### 4.5 Assessment of Waste Water Facilities in University of Uyo Hostel Accommodation

**Table 4.4: Functionality Assessment of Waste Water Facilities**

EFFECTIVENESS ASSESSMENT OF WASTE WATER FACILITIES	No	Mean	Standard Deviation	Remarks
Effectiveness of sewers outside the facility	150	3.2759	1.1576	FE
Effectiveness of drains in the toilets	150	2.5931	0.8207	FE
Effectiveness of pipes carrying soil water from water closet	150	2.5931	0.7499	FE
Discharge of waste water from wash hand basins	150	2.5793	1.0115	FE
Effectiveness of pipes carrying waste water from wash hand basins	150	2.5517	0.5644	FE
Effectiveness of inspection Chambers	150	2.4897	0.7557	FE
Effectiveness of waste water sewers	150	2.4483	0.5884	I
Effectiveness of pipes carrying waste water from bathrooms	150	2.3379	0.7747	I
Effectiveness of soak away	150	2.2897	0.7810	I
Effectiveness of drains carrying waste water from bathrooms	150	2.2138	0.5551	I
Effectiveness of urinals	150	2.1793	1.1406	I
Effectiveness of W.C	150	2.1103	0.5906	I
Effectiveness of drains	150	2.0483	0.8687	I
Mean Average		2.44		

**FE= fairly effective, I = Ineffective**

Table 4.4 shows the results of the analysis of information collected on the functional assessment of waste water facilities as represented by the means in a descending order of magnitude.

It can be observed from the table that means gotten from the analysis of the effectiveness of sewers outside the facilities, drains in the toilet, pipes carrying soil water from water closets, discharge of waste water from wash hand basins, pipes carrying waste water from wash hand basins and effectiveness of inspection chambers, all fall within 2.45-.3.44 mean range. This implies that evaluated waste water facilities with means in this range in Uniuyo hostels are fairly effective.

Furthermore, evaluation of the effectiveness of waste water sewers, pipes carrying waste water from bathrooms, effectiveness of soak away, drains carrying waste water from bathrooms, urinals and water close

(W.C), all have means in the range 1.45-2.44, which inferentially means that these facilities within this mean range are ineffective.

#### 4.6: Assessment of General Condition of Sanitary Facilities in University of Uyo Hostels.

**Table 4.5: Condition Assessment of Sanitary Facilities**

Condition assessment	No	mean	Standard deviation	Remark
Condition of inspection Chambers	150	2.8400	.87531	FE
Condition of W. C	150	2.7933	1.87994	FE
Condition of pipes supplying water to cisterns	150	2.7800	.79318	FE
Condition of soak away	150	2.7533	.62323	FE
Condition of tap pipes	150	2.5733	.63823	FE
Condition of pipes carrying waste water from wash hand basins	150	2.3467	.81912	I
Condition of cisterns	150	2.2933	.66096	I
Condition of drains in the bathrooms	150	2.2667	.72043	I
Appearance of cisterns	150	2.2267	.63612	I
Condition of cisterns handles	150	2.2200	.91130	I
Condition of taps heads	150	2.2067	.86929	I
Appearance of W. C	150	2.1800	.74248	I
Condition of pipes carrying soil water from W.C	150	2.1533	.72108	I
Condition of shower pipes	150	2.1133	.73764	I
Condition of drains in the toilets	150	1.8867	.70982	I
Condition of shower heads	150	1.8867	.76445	I
Average Mean		2.35		

FE = Fairly effective, I = Ineffective.

Table 4.5 assesses the condition of the facilities generally. From the table, the mean derived from the analysis of the condition of inspection chambers, water closet (W.C), pipes supplying water to cisterns, soak away and tap pipes have means that fall within 2.45-3.44 which implies that facilities with mean values in this range are fairly effective.

The table also shows, from the evaluation, the conditions of pipes carrying waste water from wash hand basins, cisterns, drains in the bathrooms, tap heads, cisterns handles, appearance of W.C, pipes carrying soil water from W.C and condition of shower heads. Analysis of these facilities gave means that fall within 1.45-2.44 mean range which means these facilities are ineffective.

#### 4.7: Assessment of User Satisfaction with University of Uyo Hostel Accommodation

**Table 4.6: End Users Satisfaction Assessment**

	N	Mean	Std. Deviation	Remark
Appearance of cisterns	150	3.0000	4.20770	MS
Water availability in the cisterns	150	2.8733	0.94334	MS
Appearance of taps	150	2.5867	0.62591	MS
Rate with which waste is flushed from W. C	150	2.4933	0.63189	MS
Satisfaction with the taps	150	2.3800	0.55163	D
Satisfaction with the W. C	150	2.3133	0.76093	D
Satisfaction with the cisterns	150	2.2733	0.80182	D
Comfort using the facility	150	2.2400	0.70168	D
Satisfaction with the cisterns handles	150	2.1867	0.83856	D
Appearance of wash hand basins	150	2.1667	0.82264	D
Availability of hardware store	150	2.1333	0.87980	D
Water availability in the taps	150	2.1067	1.07533	D
Appearance of showers	150	1.9067	0.86967	D
Appearance of W. C	150	1.8867	0.86340	D
Floor; wet (flooded) or dry	150	1.8400	0.79495	D
Satisfaction with the showers.	150	1.7067	0.78190	D
Indoor air quality	150	1.6867	0.86805	D
Average Mean		2.38		

MS = Moderately Satisfied, D = Dissatisfied.

Table 4.6 assesses the level of satisfaction end users of the facilities. The mean value of satisfaction from the appearance of cisterns, water availability in the cisterns, appearance of taps, rate with which waste water is flushed from water closet, all fall within 2.45-3.44 mean range which implies that the satisfaction end users derive from the use of such facilities is moderate satisfaction.

The evaluation also shows that the mean derived from analysis of end users' satisfaction from using the taps, W.C, cisterns, comfortability, cistern handles, appearance of wash hand basin, appearance of showers, appearance of W.C and indoor air quality produced mean that fall within 1.45-2.44 which implies that end users of these facilities are dissatisfied from the use of the facilities with means in this range.

## 5. Conclusion and Recommendations

This study focused on students' satisfaction with sanitary facilities in university of Uyo. Evaluation of the condition, level of effectiveness and satisfaction derived from the use of the facilities was carried out by administering questionnaire copies to respondents and the data collected were entered into the computer using statistical package for social science (SPSS). The study revealed that most of the respondents were students in year 2, 3 and 4 while a few of the respondents were in year 5. It further revealed that majority of the respondents have been on campus for at least one session.

Findings also showed that most of the fixtures, fittings and sewers were in terrible conditions. Results of analysis of collected data for potable water facilities showed that 41% of the respondents claimed the facilities are fairly effective while, 59% were of the opinion that the facilities are ineffective, which implies backlog maintenance work exists and should be undertaken. In all, 29% of the respondents were moderately satisfied while a total of 71% were dissatisfied. It is therefore recommended that the university's authority consider the provision of adequate, quality and improved sewerage facilities by replacement or repair of failing fittings, fixtures, potable water pipes and sewer systems.

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