EVALUATION OF ARCHITECTURAL DETERMINANTS OF USERS' SATISFACTION IN UNIVERSITY RESIDENCE HALLS.

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JULY, 2015

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M.sc/ENV-DESIGN/8041/2011-2012

A THESIS SUBMITTED TO THE

POSTGRADUATE SCHOOL,

AHMADU BELLO UNIVERSITY, ZARIA

NIGERIA

IN PARTIAL FULFILLMENT FOR THE AWARD

OF MASTER OF SCIENCE DEGREE IN

ARCHITECTURE

DEPARTMENT OF ARCHITECTURE,

AHMADU BELLO UNIVERSITY, ZARIA

NIGERIA

JULY, 2015

DECLARATION

I declare that the work in the thesis entitled '**AN EVALUATION OF ARCHITECTURAL DETERMINANTS OF USERS' SATISFACTION IN UNIVERSITY RESIDENCE HALLS**' has been performed by me in the Department of Architecture. The information derived from the literature has duly been acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any university

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CERTIFICATION

This thesis entitled "**AN EVALUATION OF ARCHITECTURAL DETERMINANTS OF USERS' SATISFACTION IN UNIVERSITY RESIDENCE HALLS"** by BLESSING BITRUS DUNFU meets the regulations governing the award of the degree of Masters of Science in Architecture of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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ACKNOWLEDGEMENT

I express my profound gratitude to God Almighty who through his marvelous grace, for making me who I am today, has given me the ability and enablement to this project completion.

My esteemed supervisors, Arc. M.H. Mukhtar , Arc. (Dr.) M.L.Sagada and Arc. (Dr.) A.Abdullahi I want to say ‘thank you very much’, for your support and relentless effort in seeing this project to its completion. I am grateful.

My immeasurable thanks and love also to my parents, (Rev. and Mrs Bitrus D. Gonton) for their calm encouragement, willingness to go beyond their share of the parenting and steady belief in my abilities. Thanks for your love and support financially, morally, and spiritually during the many deadlines. I love you all.

To my siblings Bizum, Bulus, Nengyi and my twins Jikizum and Longji. For the endless moral support and encouragement, thanks for being there when it mattered most.

For the active and passive support of many friends and innumerable people, who have contributed greatly to my thinking and insights during the writing of this thesis, to them I am heavily indebted.

Finally, I am grateful to my classmates and colleague that have contributed ideas, comments, photographs, illustrations, and other items that have helped make this study a reality instead of a pipe-dream, indeed, these years will forever be engraved.

DEDICATION

To God, the Father, the Son and the Holy Spirit

To my twins Jikizum Frederick and Longji Isaiah**,** I will forever **Love** you.

ABSTRACT

The main purpose of this study was to evaluate the determinants of user satisfaction in university residence halls. Academic performance of any tertiary institution must necessarily be influenced by the quality and quantity of the residential accommodation (an aspect of learning environment) of the students. Hostel is an inexpensive shared room's accommodation that accepts individuals for short term stay and that provides common areas and communal facilities. Home-like accommodations as well as demand for up to date facilities, adequate provision of amenities are factors that influence the perception of students' level of satisfaction within residence halls. Satisfaction is a positive experience expressed by the occupants and beneficiaries who are presently using such services. This further expressed that students' satisfaction is derived from the difference between the expected performance of these residence hall (accommodation), and the perceived performance at the state of utilization, services provided and facilities available within the reach of the students. The methodology involves interview conducted, questionnaire survey and a numerical rating scheme of analysis with factors been appraised for the survey of students residents satisfaction. Five determinants of satisfaction were developed and used in assessing the user satisfaction of the students' residence halls. Data relating to students satisfaction were obtained by means of structured questionnaire administered on a systematic sample of 315 students within hostels from a sampling frame of 1930 residents. The quantitative data were analyzed using descriptive and statistical package for social scientist (SPSS) version 20.0. The results demonstrate that physical factors, social factors, morphological configuration of spaces, services quality are great determinants of students satisfaction, whereas these determinants were influence by adequacy of facilities provided, maintenance of facilities/services, units/hall types provided, reasons

for choosing hostel (safety and security, privacy). However, inadequacy of facilities, lack of privacy, inadequate safety and security, were consistently identified as the reasons of dissatisfactory within residence hall as indicated by the mean scores of these determinants; physical factors (mean below 1.49 strongly dissatisfied), social factors (mean range 1.50-2.4, dissatisfied), morphological configuration of spaces (mean 3.50strongly satisfied), services quality (mean range 2.50-3.49, satisfied), positive and negative factors). Functional building performance of the students housing depends on building supporting the students need such as comfort, facilities and services rendered, privacy and safety. Students' residence satisfaction must be considered to address student housing needs.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Residence Hall is among other important aspects of any tertiary institution which contributes immensely to the wellbeing of its (users) students (Joachin, 2010). However, little attention has been given to its design, construction and maintenance let alone the satisfaction derived from it by its users (Foubert, 1998). Satisfaction is the state of having ones expectation met to an acceptable level. Studies by (Ubong 2007) have shown that there is a decline in the retention of resident hall by returning students this is due to its deplorable conditions in a number of tertiary institutions. This therefore calls for an urgent response and adequate attention to be given to hostel facilities in order to create a conducive atmosphere which will enhance both the living and learning condition of its' users (Simon, 2013). Most university housings are not in an ideal condition and do not meet up with their basic requirements, affecting the accommodation quality of such institution. In line to this, user satisfaction among the residence and their level of interaction become questionable.

It is worth mentioning, that all public universities in Nigeria provides their students with hostel accommodation. However, most of them still leave much to be desired due to over population, lack of proper and adequate maintenance. This also indicates that user's satisfaction is usually not given utmost priority rather a second function when it comes to issues relating to students housing. Apart from the provision of basic accommodation, the care, support, comfort and satisfaction to be provided by hostel is being jeopardized to a large extent owing to the non-inclusion of user perception, needs and requirement in the hostel approach and procedures (Sahlin, 2007).

Satisfaction is a concept of daily life issue. Satisfaction can be derived from ones occupation, self-esteem, environment, interaction and basic physical needs such as food, shelter, clothing, belongings and other factors (Najib et al,2011). In addition satisfying users of any facilities should be one of the main objectives of providing such facility in the first instance (Oluwunmi et al 2012). Various areas of satisfaction have been examined such as customers satisfaction, job satisfaction, environmental satisfaction inclusive University housing. University student housing has been known with so many names over the years such as; dormitory, catered halls, residence halls, and hostels to mention a few of them, (Fouber, 1998). According to Hassanian (2008), comfortable living condition of students in student housing is achieved by increasing the standard of living of the students. The criteria for understanding student's residential satisfaction are similar to assessing housing satisfaction.

Salleh (2008), opined that architectural determinants of satisfaction are central facilities in neighbourhood and educational facilities. While in similar studies by Koranteng & Simons (2012), satisfaction among students is confronted with issues relating to architectural design of such residence halls which affects the way in which such accommodations are perceived as either satisfactory or dissatisfactory. In order to alleviate the problems faced in residence halls, an evaluation of these architectural determinants of satisfaction is paramount so as to improve on the quality of residence halls, thereby enhancing satisfaction and retention rate of student housing in universities. Architectural determinants of the students' satisfaction are considered the micro aspects of the residence hall of the study area, and a significant factor of the student satisfaction, thus depending on the opinions, norms, climate, values and socio-cultural differences of the students, with their hall of residence (Davis, 2013)

1.2 Problem Statement

There is an unusual increase in students' population in University institutions across the globe; Nigerian institutions which are not exempted from this are equally experiencing series of challenges such as inadequate accommodation, lack of maintenance, and coping with the pressure being exerted on the available facilities due to overpopulation. Plateau State University, also experiences the same challenges coupled with the fast growing population of the students. Beside the temporal accommodation provided, these facilities are still inadequate thus resulting to overcrowding and likewise the students discomfort and dissatisfaction. This has become a major source of concern. Therefore there is a need for provision of a more advanced accommodation, adequate facilities for students housing in tertiary institutions, hence this could be achieved by incorporating the users perception, architectural determinants that will enhances a positive shift towards the students level of satisfaction within their environment.

1.3 Aim and Objectives

This thesis is aimed at understanding key determinants of user satisfaction in student residence halls, in order to proffer solutions in residence halls. This can be achieved through the following objectives:

i. To identify the determinants of user satisfaction in students' halls of residence.
ii. To identify the preferences given to determinants of user satisfaction within the students residence halls.
iii. To examine facilities in the hostels that determines satisfaction.

1.4 Research Questions

At the end of the thesis, an attempt will be made in order to answer the following questions:

i. What factors determines user satisfaction in students' residence halls?

ii. What are the preferences given to determinants of user satisfaction by users (students) in plateau state university residence halls?

iii. How do facilities determine user satisfaction in residence hall?

1.5 Scope of Study

This research will be based on architectural determinants of user satisfaction, their level of significance in residence hall. Findings may not be generalized beyond the schools studied, plateau state university Bokkos, Jos.

1.6 Justification of Study

Plateau state University (PLASU) is a fast growing university with inadequate facilities for students' accommodation on a temporary site. Among its' proposals, student hall of residence happens to be one of its pressing needs in order to accommodate its fast growing population of students in the university. Hence, this research served as guide towards developing a proposed student village which will be environmentally friendly and be a proto-type to other subsequent resident halls. As such, this research helped to identify key issues in halls of residence and improving such conditions. It will further be of interest to investors, developers, stakeholders and school managements as it will recourse the way in which resources are being channel or imputed in resident halls.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Introduction

This chapter gives an overview of the concepts and theoretical framework of architectural determinants of user satisfaction, in comparison with other approaches. Focus in the chapter will be on addressing users' satisfaction, the concept of satisfaction, the perception and views of students' satisfaction, classification of these architectural determinants of students' satisfaction, the concept of hostel and types, and the benefits of hall of residence. These will give a guide to a summarized context of the thesis.

2.2 User satisfaction

User satisfaction is a fundamental issue in the management, design and maintenance of residence in tertiary institutions. There are certain architectural determinants or predictors of satisfaction in student accommodation. These determinants are factors or qualities which influence the satisfaction to be driven from such residence halls by its users (students). The term satisfaction means the state of being satisfied whereas to be satisfied means to meet the expectations, needs, or desires of people, (Khozaei, 2010). It also means to comply with (a condition, obligation or demand) in this context; it will be the user (student). A number of studies have been carried out in order to explore possible predictors that influence satisfaction in student hostel accommodation for instance, Khozaei (2010), Hussaina (2008), Akinluyi (2012), Joachin (2010), Nimako (2013), Foubert (1998) also evaluate physical environment and social predictors in university residence halls. Previous researchers have identified a number of determining factors that contribute to user satisfaction with experience. Some of which are positive and negative predictors, (Yan Li, 2005:30), supporting service and enabling

services (Nimako, 2013:167, 168). These predictors play an important role in the satisfaction of residence hall users. The satisfaction is what determines the degree of retention and patronage of such university housing facility. Hence, without satisfaction, there will be a decline in the occupancy ratio of hostel facilities.

2.3 Concept of Satisfaction

These residence halls tends to provide lodging, at an affordable rate and enable students to stay on campus and further gives proximity to other learning facilities. The satisfaction derived from residence halls has become an issue of concern to researchers due to its impact on the academic performance of its users, their wellbeing, and productivity, (Koranteng , 2012). It is as a result of this that architectural determinants' of user satisfaction in residence halls is given more attention. Users is generally accepted as meaning people currently using the services of a project or scheme, (Cullen 2005).For the purpose of this research, 'user' refers to a resident, or student. Najib, Yusof and Osman (2011) have identified characteristics that influence resident satisfaction with student housing; kitchens, private bathrooms, study lounges and social spaces are considered as basic necessities in student housing. Moreover, Abramson (2009) in (Najib et al 2011) finds that extra amenities such as ATM machines, parking lots, mini markets, bookstores and cafeterias should also be provided in student housing. The inclusion of these sophisticated student housing features results in a higher level of residential satisfaction.

One common residential satisfaction measurement used in previous studies is the Post-Occupancy Evaluation (Najib et al, 2011). Hassanain (2008) points out that student perceptions can be assessed in terms of technical (i.e., acoustic and visual comfort) and functional (i.e., room finishes and room layout) requirements. Deduced from his

research, technical and functional building performances are two different aspects that can be used to explain student residential satisfaction. According to a theory developed by Oliver (1980), who proposed that satisfaction level, is a result of the difference between expected and perceived performance. Satisfaction (positive disconfirmation) occurs when product or service is better than expected. On the other hand, a performance worse than expected results with dissatisfaction is a (negative disconfirmation), (Iyanka, Suzana and Sanja, 2002). Satisfaction among residential housing involves building performances and the user's satisfaction. According to (Wolfgang and Preiser, 1988), in (Akinluyi, 2012) the concept of performance in building process is central and borne out of the assumption that a building is designed and built to support and enhance the goals and activities of the occupants, and serves as a springboard which enhances the standard of living within any given building. Managing facilities involves understanding how they are performing, how user's needs are changing? A functional building performance is a different aspect that can be used to explain student residential satisfaction. This deals with how does the building support the user need, which entails the planning and design of related functional units in and around the building. This aspect is inclusive of size, relationship of spaces and their adaptability. Other physical features such as circulation, access, safety, serviceability, building operation and maintenance is an integral part of the functional performance of the building. In addition Salleh (2005), opined that residential satisfaction is a positive experience expressed by occupants when their home meets their expectation for units (accommodation provided), features (available facilities), housing services (services supply) and neighbourhood facilities. Users are people presently using the services of a project or scheme Cullen (2005). Hence, it can be deduced that user satisfaction is a positive experience expressed by the occupants and

beneficiary (e.g. customers, clients, tenants, students etc) who are presently using such services, facilities and commodities (items/property) such as: residence hall, goods and services, etc. in a residence hall, the following expectation should be met:

i. Units provided: these includes, Rooms, toilets and bathrooms, cooking area, study area,

ii. Facilities: Common room, cafeteria, central catering facilities, parking area.

iii. Housing services: Administration, safety and security, privacy, water supply, electricity supply, waste management, student welfare services, laundry, internet services.

iv. Neighborhood facilities; Recreational facilities, worship centres, outdoor area and gardens.

2.3.1 Residence satisfaction from students' perspectives

Studies have shown that students can perform well in their studies if they have good, comfortable living conditions in their student housing, evaluating and renovating of housing is crucial to increase occupant standards of living as well as rectify any defects in the facilities, (Hassanain, 2008). Thus, resident satisfaction must be considered to address student housing needs, and kohzaei et al (2011) define student housing as a densely building with many rooms in which each room contain several beds. According to this definition, student housing provides sleeping and living quarters, usually without private baths, for a large number of people and such housing is furnished and rented by bed. The criteria for understanding student residential satisfaction are similar to those used in assessing conventional housing satisfaction. Salleh (2008) explain that residential satisfaction is the positive experience expressed by occupants when their home meets their expectations for unit features, housing

services and neighborhood facilities. Thus, (Foubert *et al.* 1998; Najib, 2011) specify that residential satisfaction among students stems from high-quality facilities, positive roommate relationships, strong floor communities and quiet study environments in their living accommodations. Thus, student residence satisfaction is an evaluation of their on-campus living accommodations, providing additional amenities can add more dimensions and thus more meaning to a student's daily life. According to Bello (2009), in Najib, 2011), defines housing facilities as rooms furnished with sophisticated amenities suitable to house social activities and indicative of a certain lifestyle. This housing facilities or amenities, indicates the desire to interact and socialize with friends. Students need enough parking places for their own use; in addition, access to a cafeteria, mini market or bookshop as well as to a good banking system (ATM machine) is important (Najib et al 2011). Services also contribute to students comfort such as electricity, water supply, waste disposal, fire safety systems, regular maintenance and safety measures (Hassanain, 2008; Khozaei *et al.*, 2011).

2.4 Classification of Architectural Determinants of User Satisfaction

Although, there are numerous predictors of user satisfaction in residence hall, yet there is no clear cut or demarcation as regards the grouping of such factors. Rather, a number of classifications are identified from previous researches (Roizen 2013; Foubert 2009; Nimako 2013; Joachin 2010; Yan 2005) as identified below.

a. Physical environmental factors
b. Social factors
c. Service quality
d. Maintenance mechanism
e. Morphological configuration

f. Positive and negative determinants

2.4.1 Physical factors

The physical aspect/components of residence halls which include spaces, amenities, convenient living facilities and services are valuable predictors of housing satisfaction (Foubert, 1998, Khozaei, 2011 and Najib, 2011). Other neighbourhood facilities, location of campus, central and educational facilities such as reading rooms, bedroom, toilet/bathroom facilities, laundry, cooking area and study areas are features of physical environment which is a major predictor of satisfaction in university housing. It was also noted that the facilitation of good physical environment of residence halls expands students' intellectual capabilities Najib *et al* (2011). Hussain (2011), deduced that physical environment of a university is a strong area of consideration, since academic productivity is highly dependent on the indicators like facilities available to students and support services. Student intellectual capabilities can be expanded through facilitation of good physical environment at their residence hall. Thus the physical environment of any residence hall is a vital determinant of the user's satisfaction.

2.4.2 Social factors

Users of residence halls are perceived to be socially and emotionally more supportive due to social variables such as student relationship, financial support, crowding and privacy tend to give them a sense of community and further improve communal interaction and satisfaction with their experience in residence halls. The provision of social facilities such as common room, cafeteria, dining areas, Worship centers, Central Catering facilities (E.g. saloon, shops e.t.c), Outdoor area-gardens, Sport facilities, and other functional spaces which tend to promote social activities when incorporated in residence halls will bring about user satisfaction.

2.4.3 Service quality

Gronroos (1982) in Nimako (2013) defined, service quality as the confirmation (or disconfirmation) of a customer's expectations of service compared with customer's perception of the services actually receiver. The service equally in residence hall is important as accommodation providers do not rely on cost but more significantly on the quality of service rendered to students in residence halls, Nimako (2013). As such, the service quality and product provided/available is the basic reason why accommodation is to be provided and where this is not given adequate attention, the issue of user satisfaction become questionable. Norman, (1991) and Gronroos (1990) in Nimako (2013) classified service produced into core service products and supplementary service elements. Core service will entail variables such as bedroom, toilet and bathroom facilities. While service product consisting of supplementary services also considered as auxiliary services include utility facilities such as water, electricity etc. Other relevant supporting service that add value to student housing will include common room, library, case of transportation to lectures, entertainment facility, garage, and parking areas. Safety and security services, Internet facility services, Student welfare services, Administration services, Electricity services,Water services, Waste disposal, Drainage systems among others, Nimako (2013)

2.4.4 Maintenance mechanism

The maintenance is an indispensable aspect of residence hall as it helps resuscitating such accommodation facilities to a state where it can perform its intended function(s), Joachin (2010). Such maintenance could either be planned or unplanned maintenance, Seeley (1981) in Joachin (2010), which should be carried out regularly in order to prevent available facilities from breaking down and getting to a level of dilapidation or

deploration that will be beyond repairs. Hence keeping residence halls in good conditions and under check gives it a good impression and satisfaction to its users.

2.4.5 Morphological configurations of residence halls

Morphology is concerned with the form, shape and/or structure of anything made up of interdependent parts. In a study conducted/carried out by Roizen (2013), it was observed that one of the strongest determinants of satisfaction was resident hall type. Also, in a similar survey, by Amole 2001 in (Najib, 2011) the morphological configurations of residence halls predicted resident satisfaction with more than half (53%) of the sample population indicating dissatisfaction with residences, As such, the morphological arrangement of residence hall is a determinant of satisfaction and should be given its proper place in the plan form, organizational layout shape and form of residence halls, Martins (2012).

2.4.6 Positive and negative factors

Factors that where considered as beneficial, plus as to the determination of users residing in residence hall are considered as positive predictors or factors, examples of such include: Location close to campus, ability to choose where you live, academic support available and high speed internet facilities (Yan, 2005).

Other items that were significantly negative which will lure students to moving off-campus to the non-retention of their residence halls in subsequent sessions are considered as negative determinants. It can also be said that negative predictors are those factors, condition or facilities that are deficient, unavailable or allowed in residence halls but can be obtained in off-campus accommodations. Hence, such unobtainable and inaccessible variables and determinants of user satisfaction in residence halls include: ability to cook, proximity to campus/town, private bathroom,

parking accommodation, ability to live with or near friends, ability to study where you live (Yan 2005).

2.5 Hostel and Hostels Types

Joachim (2010) identifies hostels as an inexpensive, supervised, short lodging especially for young people; there are also self-catering hostels provided with kitchenette in which hostellers provide and prepared their own meals and many hostels within Nigerian tertiary institution falls within this category. A hostel is a budget oriented, shared room (dormitory) accommodation that accepts individuals, travelers or group of short-term stays, and that provided common areas and communal facilities(hostel management). Aside the provision of single and shared bedroom accommodation in a hostel; adequate facilities are required to create a conducive atmosphere for learning and living for students. Facilities for a standard modern hostel may include security, electricity, water supply, cafeteria/kitchenette, medical Centre; refuse disposal, car park, laundry, business Centre, shop, recreational facilities, library and bank. In addition to bedrooms will provide for common rooms, meeting rooms, management offices, wardens flat and general store (HKUST, 2002; IIT Hostels, 2007, as cited by Joachim 2010).

Two mainly types of hostel are identified in Nigeria which are the institutional and private hostels. Institutional hostels are those provided for the institution by their owners or benefactors while the private hostels are developed and owned by private estate developers and investors for profit maximization purposes. The design of hostels in addition to the above mentioned types, according to time- saver standards, residence halls were classified in five basic plan types:

i. **The double-loaded corridor:** A series of perimeter rooms on both sides of a five-foot corridor, usually with gang baths and stairs at either end

ii. **The gallery plan:** A variation of the Double- loaded Corridor with rooms on one side only of an open or closed corridor

iii. **The extended core plan:** A series of perimeter rooms around four sides of a structure. In the center is a core of service rooms including gang toilets, janitor's closets, elevators, etc. A corridor usually surrounds the core on four sides

iv. **Vertical house:** A series of 4, 6, 8 rooms, suites, etc. A stair serving one or two such configurations of rooms or suites is provided, creating the feeling of an individual house

v. **Tower plan:** Usually but not always high-rise with vertical circulation such as stairs and elevators in a center core along with gang baths and service rooms. The rooms, suites, and arrangements are on the perimeter, Shared baths are often used with suites of 4, 6, 8 persons.

2.6 Benefits of Hall of Residence (Hostel)

Students' accommodation is a vital issue to be given consideration to in any tertiary institution. Students' residence halls tend to provide lodging, at an affordable rate and enable students to stay on campus. More so, those who are living in hostels provided by the institutions will attest to the usefulness of the facility, whereas some of the benefits of students' residence halls include but are not limited to the following:

i. **Enhance academic performances:** Students hall of residence facilitate reading and learning habits as to nearness or proximity of other facilities on campuses such as library and lecture halls. The student's performance is encouraged by the level of development of the study environment; which includes among

others, residence facilities, library, laboratory, lecture halls, health and recreational facilities. It was also noted that the facilitation of good physical environment of residence halls expands student intellectual capabilities, Najib et al (2011)

ii. **Security:** According to (Ubong 2007), students are more secured on campus in spite of some menace; due to this, the university maintained security personnel on campuses who monitor activities of the students.

iii. **Private Relationships:** hostel roommates and private relation could blossom into live time to positive relationship that would be beneficial to both parties.

iv. **Moral Training:** Institutions have moral conducts and code of conducts that guide and regulate behaviors in hostels.

v. **Co-curricular Activities**: This may include social activities, clubs, sports that are expected to make the students more rounded individual or as citizens

2.7 Summary and conclusion

In summary, these determinants are factors or qualities which influence the satisfaction driven from such residence halls by its users (students). The criteria for understanding student residential satisfaction are similar to those used in assessing conventional housing satisfaction, which further explains that residential satisfaction is the positive experience expressed by occupants when their home meets their expectations for units (accommodation provided), features (available facilities), housing services (services supply) and neighbourhood facilities. Although, there are numerous determinants of user satisfaction in residence hall, yet there is no clear cut or demarcation as regards the grouping of such factors, which includes; The physical aspect/components of residence halls which are spaces, amenities, convenient living facilities and services are valuable predictors of housing satisfaction, thus physical environment of any residence hall is a

vital determinant of the user's satisfaction. Social factors and influence within students residence, tends to give them a sense of community and further improve communal interaction and contributing to the level of satisfaction with their experience in residence halls. Services provided have a lot of influence on students' perception of their environment. To further compliment maintenance, keeping residence halls in good conditions and under check gives it a good impression and satisfaction to its users. The lessons gotten from here will help in developing a relevant approach to the project in the next chapter.

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives an overview of the research design, sample selection and research procedures, area of study, variables, research techniques used and how validity and reliability were maintained. Highlights of the field work procedures and data analysis are equally presented in this chapter. This is basically a mixed research as such qualitative research tools which include in-depth interview, observation, visual survey, and questionnaire survey will be used in the course of the research procedure. Stratified and systematic sampling will be used for the purpose of this research.

3.2 Research Design

Research which can be to investigate an idea systematically and methodologically aims at proffering solution to problems and contributing to knowledge. The research procedure is peculiar to the research activities which clearly itemize the key issue in the research (Clarke, 2005). This study will consist of both approaches; the instruments of data collection used include the following: in-depth interview, visual survey, questionnaire survey with the aid of secondary data. Case study approach was equally used during the field work. This study used a descriptive survey research design utilizing both qualitative research methods and quantitative research method. Detailed analysis of residence hall situations was considered in order to obtain data that were peculiar to the research. Variables were used and checked so as to understand how a particular variable affects an aspect of the hostel.

3.2.1 Case Study Selection Criteria

Resident halls to be selected for case study will be purposive. This depends on its relevant to plateau state university base on;

i. Location; schools located within the study area region.

ii. Socio-cultural similarities of values, social context and perceptions of the students within the study area.

iii. The similarities of macro-climatic conditions of the study environment.

3.3 Research Instruments

Basically, four instruments of data collection were adopted for the study. The research tools mentioned were incorporated, namely; visual survey which involved the use photographs, documentation, sketches, and checklist, Semi-structured interview and questionnaire survey inclusive.

3.3.1 Visual survey

This consists of sketches, checklist, photographs, and note taking from selected case studies.

i. Check list:

The checklist which was generated from research templates was used to assess key facilities, items and spaces. These variables were used to assess the performances and situations of the selected hostel studied and the available facilities. The sample of the checklist is shown in appendix D.

ii. Photographs:

Photographs were taken in order to complement data obtained from other instrument of data collection used. Such photographs indicated available facilities showing the present state of hall situations and performance.

iii. Note taking:

Notes were taken in the course of conducting interview and touring round the hostel facilities. This was used to keep record during data collection.

3.3.2 Interview

Interview was conducted with the hostel management staff and a number of the students whom were selected at random within the residence hall in PLASU. An interview was conducted with the head of students' affairs who oversees the hostel administration in university which lasted for about ten minutes, whereas four female students and four male students were interview from each row of chalets that were selected purposively. The sample of the interview is in the appendices B.

3.3.3 Questionnaire survey

Questionnaires facilitate the collection of data by asking all, or a sample of people, to respond to the same questions. A Face-to-face method of administration was adopted to administer 315 questionnaires in which only 286 (91%) were retrieved from the respondents. The questionnaire was divided into five sections namely: personal data, housing, economic, social, and environmental/physical. The questionnaires were administered and retrieve the same day. The hostel was selected in a systematic random manner. This made it possible to collect adequate information and opinions from the respondents within a short period of time. The study population consisted of all the

residents, users of spaces within the residence hall of plateau state university. The sample of the questionnaire is shown in appendices A.

3.4 Population Size and Sampling

In qualitative research, only a sample (that is, a subset) of population is selected for any given study. Population size of the PLASU students that were accommodated was compiled to be 1,930.This comprised of students whom are staying in hall of residence

3.4.1 Sample size

According to (Krejcie & Morgan 1990), required sample size is determined by the formula given below.

$s = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$.
s = required sample size.

$X2$ = the table value of chi-square for 1 degree of freedom at the desired confidence level

(3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum (Sample size)

d = the degree of accuracy expressed as a proportion (.05).

The sample of the sampling size determine for this research is in appendices D,as 315 sample was used for the number of questionnaires designed.

3.4.2 Sampling technique

Using a simple random cluster sampling procedure, the respondents were selected from every row of chalet in female and male in every hostel housing cluster. This sampling method was chosen according to the method used by Najib et al (2011) because the respondents are already naturally clustered into groups (i.e. by chalet and gender).

3.5 Variables

Variables to be used would either be subjective or objective. The residence hall will be divided into two sections viz: accommodation and (residence hall) facilities which includes; Units provided(Rooms, toilets and bathrooms, cooking area, study area,), Facilities(Common room, cafeteria, central catering facilities, parking area.), Housing services(Administration, safety and security, privacy, water supply, electricity supply, waste management, student welfare services, laundry, internet services.) and Neighborhood facilities; Recreational facilities, worship centre, outdoor area and gardens.

3.5.1 Subjective variables

These variables are based on users' opinion, perception and idea or evidence rather than facts which tend to vary from one item to another base on individual difference/uniqueness. This includes: Privacy, Safety and security, facilities and services provided, Over-crowding, Organizational layout,

3.5.2 Objective variables

These are variables base on facts rather than opinion or idea. Their limit, gab and boundary are narrow or streamlined. This variable includes:

Gender, Age, Level, Department

3.6 Data Analysis and Presentation

Descriptive and Statistical analysis of data were used in order to discuss findings from the collected data. All the information from the questionnaires was entered into SPSS using descriptive statistics, graphs, tables and charts. The interpretation of the descriptive statistics made it possible to make appropriate inferences into various themes.

CHAPTER FOUR

4 DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter covers the description and analysis of the cases studied. It presents data as it is obtained from the cases visited, studied and analyzed based on the established study areas. In addition, it contains the discussion of findings from the preceding chapter(s) and presents inferences and deductions from statistical analysis. Identified principles from literatures and developed into the framework for this research. As stated previously in chapter one, this study aimed at understanding key determinants of user satisfaction in students' residence halls in order to proffer solutions in residence halls in plateau state university, bokkos. . It therefore highlights the findings from study, and how such will aid in an attempt to answer the research questions posed in chapter one.

4.2 Questionnaire Analysis

A Face-to-face method of administration was used to administer 315 questionnaires of which 286 (91%) were retrieved from the respondents.

Table 4.1: Demographic characteristics of respondents

Variables		Frequency	percentage
Gender	Male	183	64
	Female	103	36
	Total	286	100
Age	16-20	70	24
	21-24	94	33
	25-29	71	25

	30and above	51	18
	Total	286	100
Study level	100	72	25
	200	48	17
	300	68	24
	400	59	21
	500	39	13
	600	-	-
	Postgraduate	-	-
	Total	286	100
Stayed	Yes	286	100
	No	-	-
	Total	286	100
Duration of stay	One semester	60	21
	One session	65	23
	Two sessions	57	20
	Three session	51	17
	Four sessions	53	18
	Others	4	1
	Total	286	100

(Source: Researcher's field work, 2014)

The research results as indicated in table 4.1 shows that183 students representing 64% are male, 103 students representing 36% are female.

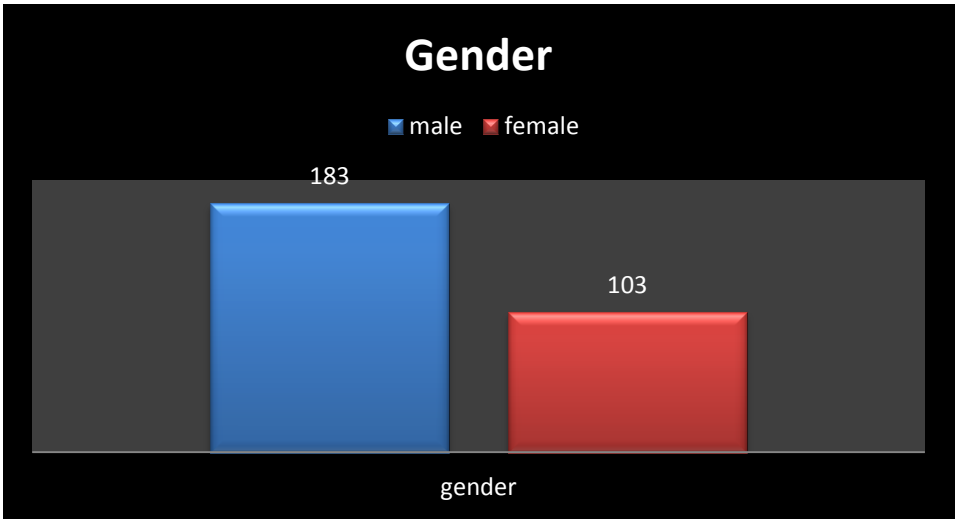


Figure 4.1:gender distribution of respondents.

(Source: Researcher's field work, 2014)

70 students representing 24% are between age 16-20, 94 students representing 33% are between age 21-24, 71students representing 25% are between age 25-29 and 51 students represent 18% are between age 30 and above.

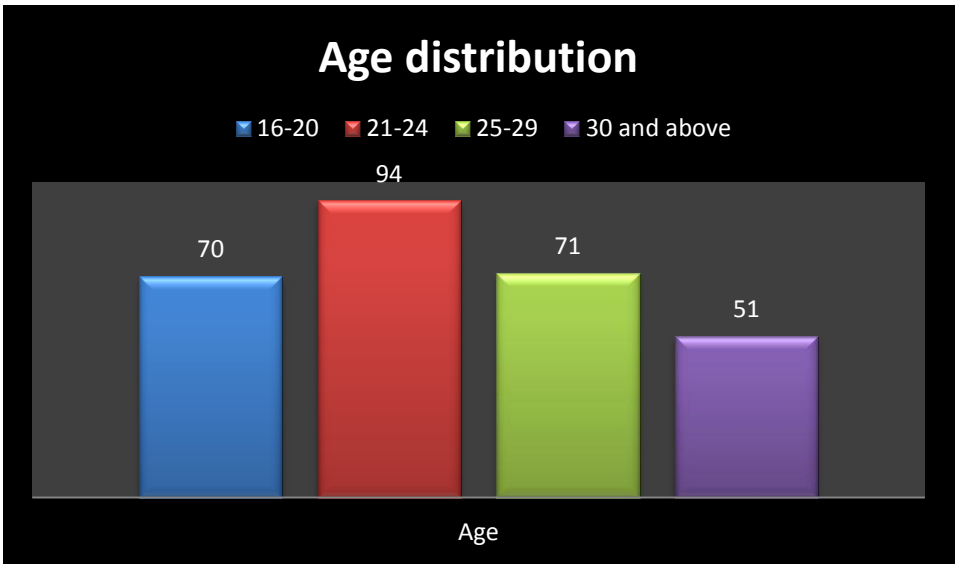


Figure 4.2: age distribution of respondents

(Source: Researcher's field work, 2014)

As shown in table 4.1, 72 students represent 25% whom are 100level students,48 students representing 17% are 200levelstudents, while 68 students representing 24% are 300level students.59 students representing 21% are 400level students and 39 students representing 13% are 500level.however, zero number of students represents 600level and postgraduate students respectively.

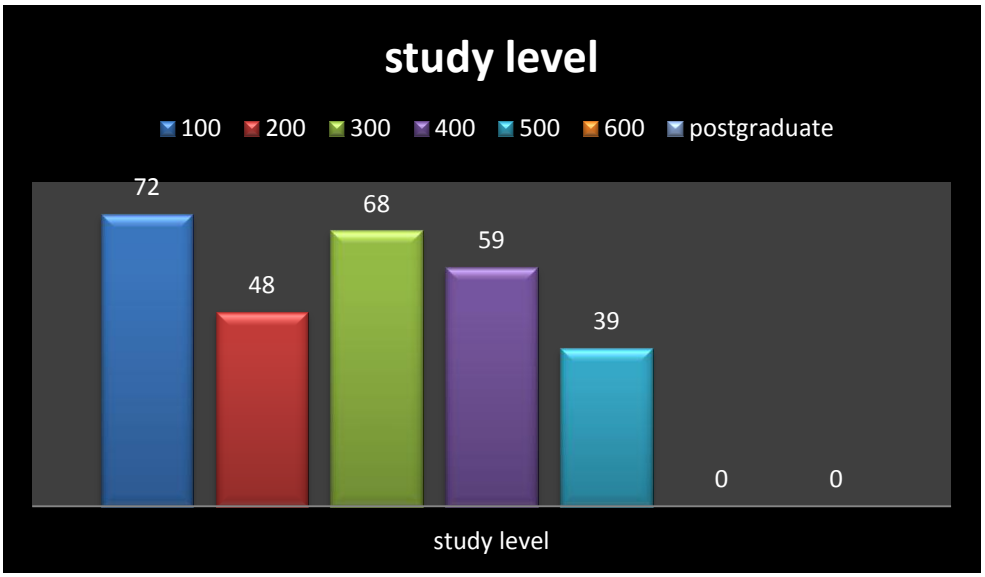


Figure 4.3: study level distribution of respondents.

(Source: Researcher's field work, 2014)

The result further shows that 286 students representing 100% accepted yes to have stayed in hostel before .while zero number of students recorded to have not stayed in hostel. More so, 60 students representing 21% have stayed for one semester in hostel,65 students representing 23% have stayed for one session,57 students representing 20% stayed for two sessions.51 students representing 17% reside for threesessions,53 students representing 18% also reside for four sessions while 4 students representing 1% stayed for less a semester.

Table 4.2:level of students' satisfaction

Variables	Frequency	Percentage	Average mean	S.D
Physical variables				
• **Rooms**	17	6		0.722
• **Toilet/bathrooms**	17	6		0.722
• **Cooking area**	11	4		0.188
• **Laundry**	10	3		0.400
• **privacy**	8	3		1.133
Social factors				
• **Common room**	5	2		3.000
• **Central catering facilities**	18	6		1.133
• **Outdoor area**		3		0.400
• **Worship centre**	10	5		3.010
• **Sport facilities**	14	5		0.000
• **Cafeteria**	13	6		0.400
• **Parking area**	16	2		2.222
	6			
Service quality				
• **Safety and security**	10	2		0.0454
• **Internet services**	12	4		0.0454
• **Student welfare**	17	6		0.7272
• **Administration**	10	3		0.4090
• **Electricity services**	24	8		5.5000
• **Water services**	29	11		11.6363
• **Waste management**	14	5		0.0454

Morphological factors			
• **Study area**	8	3	1.1363
• **Organizational layout**	18	6	1.1363
• **Overcrowding**	4	1	3.2818
Total	286	100	

(Source: Researcher's field work, 2014)

In order to establish the level of students' satisfaction with the available facilities base on using architectural determinants, certain variables of user satisfaction in residence hall, values were used by (Najib, 2011) to quantify students' satisfaction with the residence hall. The mean response for variables was calibrated as follows:

If the mean response is below 1.49, this indicates that students are "strongly dissatisfied", if the mean response is between 1.50 and 2.49, this indicates that students are "dissatisfied", if the mean response is between 2.50 and 3.49, this indicates that students are "satisfied" and if the mean response is above 3.50, this indicates that students are "strongly satisfied".

4.2.1 Physical variables

These variables consists of the rooms, cooking area, toilets and bathroom, laundry and its privacy which are essential components that must be provided in all students housing. This combines the living, sleeping and study facilities (Hassanian 2008). Most of the study bedrooms are design to accommodate two people for academic, social purposes.

While bathrooms were provided in students housing to serve a set of four to five bedrooms, laundry rooms must be large enough to accommodate students because it has become a popular requirement in student housing (Najib 2011).

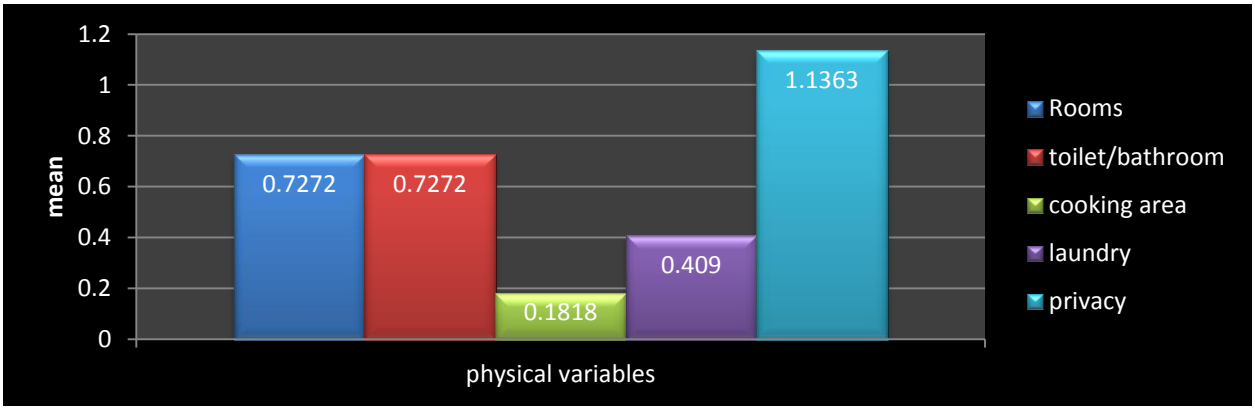


Figure 4.4: Chart of level of students' satisfaction with physical factors.

(Source: Researcher's work ,2014)

Students tends to express level of dissatisfaction with the provided facilities most times is due to lack of proper maintenance and cleanliness. Figure 4.4 indicates that students were strongly dissatisfied with these facilities given the mean below 1.49. Sense of privacy and comfort with the use of these facilities is lacking because windows and some of the doors are not properly in place leaving the toilets and bathrooms in bad condition.

4.2.2 Social factors

Providing additional amenities can add value to students' daily life, and affect students' academic performances, access to cafeteria, mini markets as well as good banking system, enough parking spaces is crucial (Hassan, 2009). Sports facilities, outdoor areas and gardens also help students' communal living and enhance comfort.

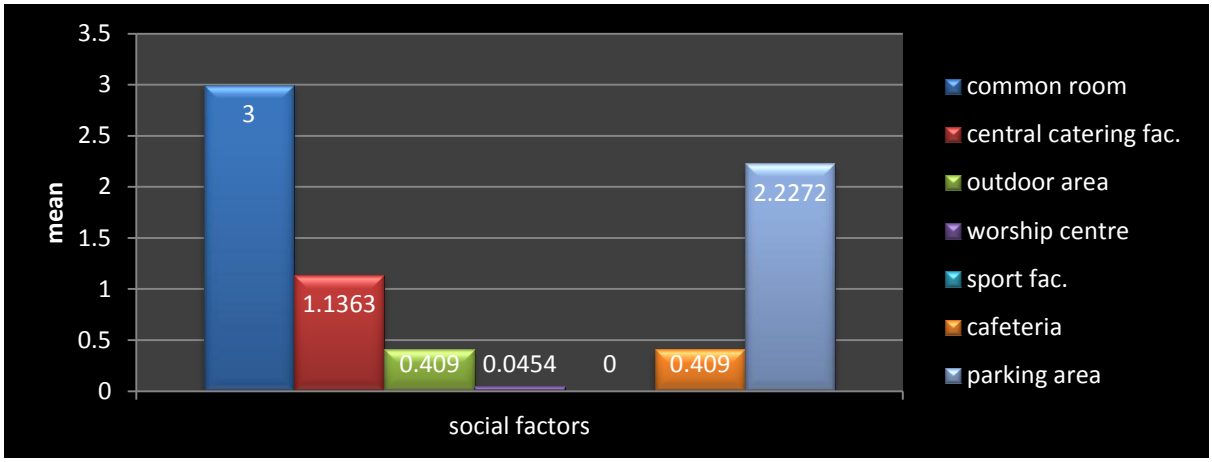


Figure 4.5:Chart of level of students' satisfaction with social factors.

(Source: Researcher's work ,2014)

Table 4.2 indicates that students were satisfied with common room with the mean ranging from 2.50-3.49, dissatisfied with parking area with the mean range of 1.50-2.4, which were not provided. The same results in figure 4.4 shows how strongly dissatisfied the students were with the following cafeteria, outdoor area, sport facilities, worship centre and central catering facilities such as mini markets, shops e.t.c. because these facilities were not provided.

4.2.3 Service quality

The result indicates in table 4.2 above shows that students are satisfied and strongly satisfied with the services provided in the residence hall with the mean range between 2.50-3.49 and 3.50 and above.

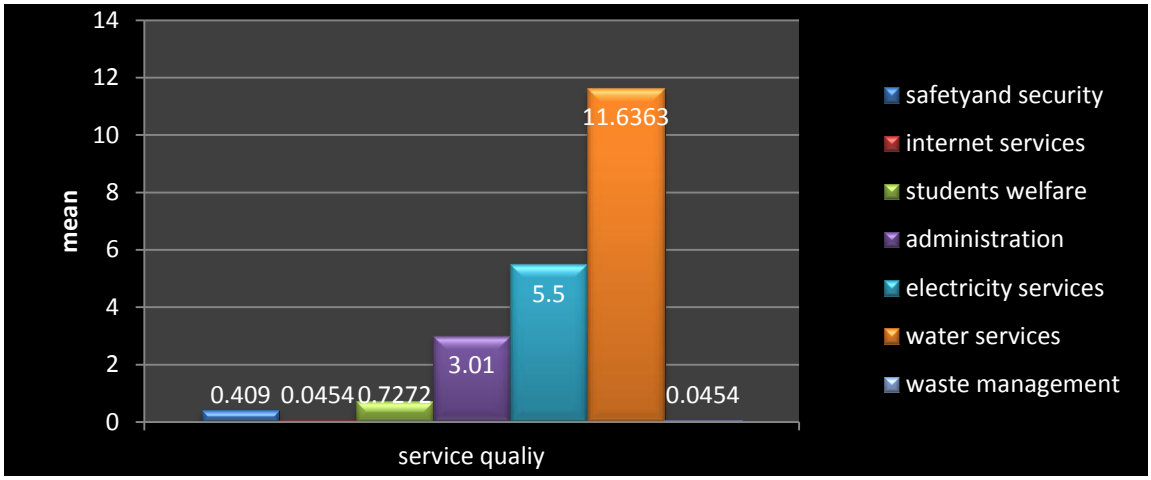


Figure 4.6:Chart of level of students' satisfaction with service quality.

(Source: Researcher's work, 2014)

They are strongly dissatisfied with safety and security, internet services, students' welfare, administration and waste management with the mean value 1.49.

4.2.4 Morphological factors

That student are strongly satisfied with the organizational layout of the residence the mean range is above 3.5; however the students were strongly dissatisfied with study area and overcrowding with a range below

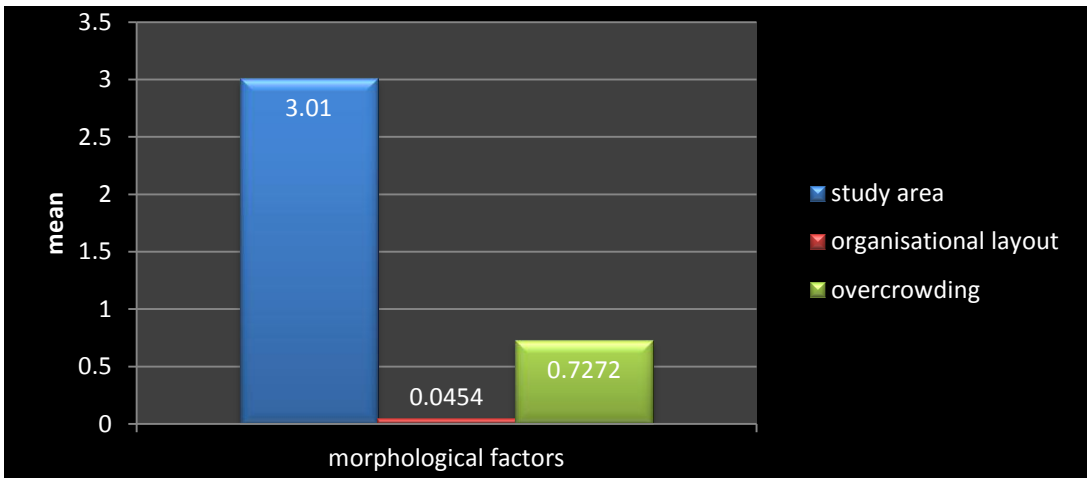


Figure 4.7: Chart of level of students' satisfaction with morphological factors

(Source: Researcher's work, 2014)

4.2.5 Research question one: What factors determines user satisfaction in students' residence halls?

These determinants are factors or predictors which influence the satisfaction derived from such residence halls by the students, and this focuses on the examination of the on-campus living accommodations of the students. Although, there are numerous determinants of user satisfaction in residence hall, yet there is no demarcation as regards the grouping of such factors. Findings from the literature and the questionnaire analysed which was illustrated in table 4.2 had shown that the criteria for understanding these determinants of student residential satisfaction are similar to those used in assessing conventional housing satisfaction. These include;

- **Physical factors** (rooms, toilets, bathroom, cooking area, and study area) also known as **Units.**
- **Social factors** (Common room, cafeteria central catering services and parking area) also known as **Facilities provided**
- **Service quality (**administration, safety and security, privacy, water supply electricity supply, waste management, student welfare, internet services) also known as **housing services**
- **Social factors** (recreational facilities, worship centers, outdoor area, sport facilities, gardens) also known as **neighbourhood facilities.**

4.3 Chi-square (χ^2) Analysis

The Chi-square test was used to test the level of satisfaction among students in residence hall whether the reason for choosing residence hall, preference to hall type, space organization of hall residence, adequacy of facilities and services, is dependent on level of satisfaction. The calculated value of chi- square (χ^2) and the p-value were

obtain by the use of a statistical package for social sciences (SPSS) version 20.This test also determines whether two cross tabulated variables is significant.

The significant value (p-value) the lower the significant value, the less likely it is that the two variables are independent. In this case the significant value is so low that it is displayed as .000, which means that it would appear that the two variables are indeed related.

Table 4.3: students' preference to the determinants of satisfaction

Variables	Person chi-square	Df	p-value	Ranking
Stayed in hostel	11.363	4	.230	7th
Reasons for choosing hostels • **Safety and security** • **Privacy** • **Nearness to school facilities** • **Free accommodation** • **Affordable rentage** • **Quality of services provided** • **Provided facilities**	187.936	20	.000	1st
Preference to hall types • **Shared rooms** • **Self contained room** • **Luxury rooms**	86.510	16	.000	5th
Hostel maintenance	112.462	16	.000	4th
Space organization of residence hall • **Room sizes** • **Blocks/halls** • **Toilets/bathrooms** • **Cafeteria** • **Common room** • **Overall layout of the hostel**	36.212	16	.000	6th
Adequacy of facilities • **Safety and security** • **Privacy**	141.505	16	.000	3rd

• **Quality of services rendered** • **Provided facilities** • **Central catering facilities** • **Recreational area**				
Positive reasons that makes stay satisfactory in residence hall • **Safety and security** • **Quality of services rendered** • **Privacy** • **Auxilary catering facilities** • **Nearness to school facilities**	155.727	16	.000	2nd

(Source: Researcher's work, 2014)

$P > 0.05$, $\alpha = 0.05$

The possible hypotheses are;

H_0: The variables are independent on the users' satisfaction.

H_1: The variables are dependent on the users' satisfaction

Conclusion: Since *P*-Values are greater than 0.05 first of all reject H_0 and conclude that students' satisfaction is dependent on Reasons for choosing hostel, hall types, Hostel maintenance, Space organization of residence hall, Adequacy of facilities and services provided, positive reasons that makes stay in residence hall satisfactory.

Secondly, do not reject H_0 and conclude that Students' satisfaction is independent of students stayed in hostel.

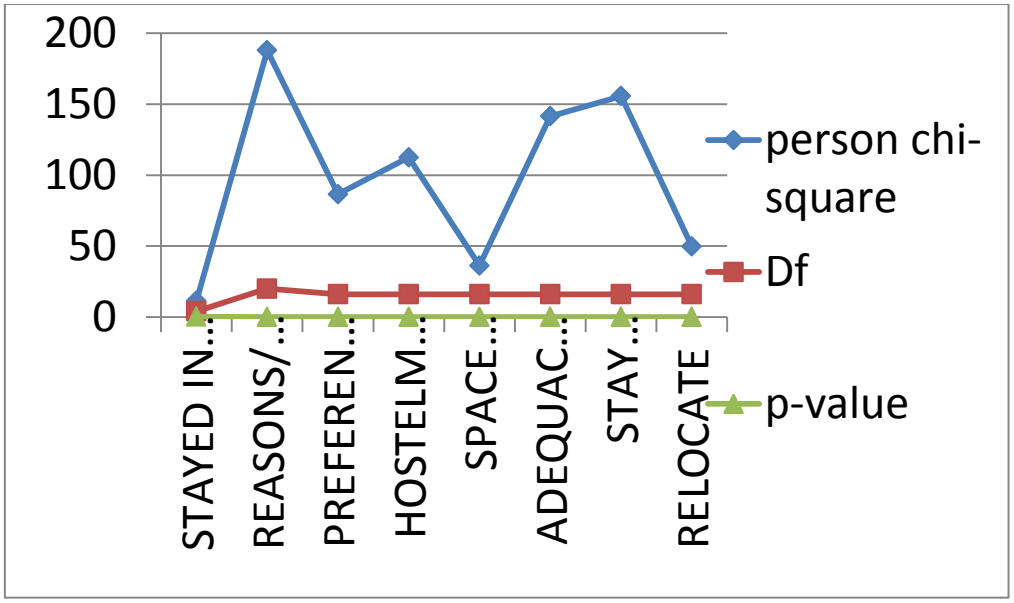


Figure 4.8: Chart of students' preference to determinants of satisfaction.

(Source: Researcher's work, 2014)

The same figure 4.8 revealed that among the facilities which are dependent on user satisfaction, students' shows level of preferences to such facilities within the residence hall as shown in table 4.3 above.

4.3.1 The reasons for choosing residence

This was reported the highest preferred, which includes students safety and security, privacy within the residence hall, nearness to school facilities from the residence hall, when entitled to affordable accommodation, availability of services, e.g. electricity supply, water supply e.t.c, and provided facilities like cafeteria and common room. Students show the need to choosing hostel in the first instance because of the derived satisfaction with such facilities which amongst the factors is rated the highest preference which enhances satisfaction as shown in figure 4.8 above with the person chi-square value of 187.936 as the first ranking. Even though the students were dissatisfied with privacy and cafeteria within residence hall.

4.3.2 Reasons that make students stay satisfactory in residence hall.

The second highest preferred variables include safety and security, privacy, the quality of services provided, central catering facilities and nearness to school facilities khozaei et al (2011), proposed that adequate physical facilities that support the educational process contributes in important ways to students learning. Therefore services provide such as proper lighting, privacy in rooms, safety in residence hall, getting access to water supply can improve the daily needs of students. Meanwhile students' shows students showed dissatisfaction with the present state of these variables.

4.3.3 Adequacy of facilities

This is the third variable that confirms students' preferences to determining satisfaction with the person chi-square value of 141.505, distribution factor of 16 and p-value of.000.the adequacy of provided services within residence hall determines level of satisfaction. In addition, the students showed a great desire for adequacy of provided facilities within the hall. Maintenance also matters as it enhances comfortable living condition of students. Thus maintenance is ranked the fourth preference of the determinacy of satisfaction among students residence hall, with person chi-square value of 112.462, p-value .000 and a distribution factor of 16, as shown in figure 4.8 above. The three important variables includes; preference to hall types, reasons that makes students relocate to off-campus if facilities such as overcrowding in hostel, lack of privacy, if off-campus is the only accommodation, lack of water supply, lack of freedom. Lastly the space organization of the residence hall, which includes room sizes, type of toilets and bathroom, and the overall layout of the hostel.

4.3.4 Research question two: What are the preferences given to determinants of user satisfaction by users (students) in plateau state university residence halls?

The students indicate level of acceptance and perception as to the satisfaction derived within the residence hall. These values are showing the ranking at which they attached level of satisfaction with the present state of the residence hall as indicated in the chi-square analysis result, which was discussed in the table 4.3 and shown in figure 4.8. Below indicates the key factors of the preference given among the determinants of user satisfaction in the students' residence hall, as a result of variation in students' perception of their residence hall.

- **Reasons for choosing hostel;** these reasons (safety and security, privacy, nearness to school facilities, quality of services provided, provided facilities, affordable rentage) as indicated with the chi-square value of 187.936 were the major priority as to which the students' satisfaction is determined.
- **Reasons that make stay satisfactory; (** quality of services rendered, supporting facilities provided, privacy, safety) with the chi-square value of 115.727
- **Adequacy of facilities provided;** rating with the chi-square value of 141.505, it's the third most preferred reasons as to predictors of the students' level of satisfaction within residence hall.
- **Maintenance of facilities/services;** this is fourth preferred determinants of the students satisfaction with the chi-square value of 112.462
- **Units/hall types provided**; students have identify their level of satisfaction with the accommodation type provided(shared rooms, self-contained rooms, luxury rooms) as its rated one of the fifth preferences as to reasons that determine satisfaction, with the value 86.519

- **Space organization of the residence hall;** this is the last preferred factor that determine satisfaction (room sizes, toilets and bathrooms, cafeteria, common rooms, overall layout) with the chi-square value of 36.212

4.4 Findings from Interview

- The interview conducted with the student affairs officer and the students of plateau state university bokkos, the following conclusions were reached.

- Proximity and nearness to school facilities and lecture halls tends to enhance students satisfaction with the residence hall.

- Students' shows level of satisfaction with the following provided facilities and amenities within residence hall: water supply, electricity supply.

- Students desire single rooms than to shared rooms for privacy and comfort

- Students tends to show dissatisfaction with lack of provision of facilities such as cooking area, recreational area, study area, sport facilities, hostel hygiene and maintenance, and waste management

- Students indicate dissatisfaction within the residence hall on the aspect of comfort, safety and security with the residence halls, overcrowding and congestion.

4.5 Case Study One: Plateau State University Student Hostel Bokkos, Plateau.

4.5.1 Background

Plateau state university, bokkos is located on a large expense of virgin land measuring more than 700 hectares between butura and tarangol axis of bokkos local government area about 50 kilometers away from jos the state capital. Its focus is to develop a very simple functional but elegant institution that can stand the test of time.



Plate I: Integration of students' hostel, plateau state university.

(Source: Researchers field work, 2014)

4.5.2 Site planning and landscaping

The PLASU students hostel adapts linear pattern for the site planning concept even though it was not purposely design for students accommodation, rather was for temporal usage.



Plate II: An Ariel view of plateau state university students' hostel bokkos.

(Source: Google earth, 2014.)

This is basically made up of clustered free-standing chalets, which forms the male and the female residence, with a student centre that divides the two sections of the students' hostels respectively as seen in plate II above. The other five different chalets at female residence wing consist of the clinics with offices which are used by the school administration. Each free-standing chalet has a capacity of sixteen students; thus this comprises of two hundred and seventy two female students and three hundred and fifty two male students respectively, hence having a total number of six hundred and twenty four. The landscaping is not good because it does not incorporate the soft and hard elements rather the natural vegetation of the environment is left unplanned, thus qualifying the hostel as not properly landscaped. There is no defined entrance to the hostel; both the male and the female hostel are directly accessible from the untarred road that links to the hostel as shown in plate II above.

4.5.3 Spatial organization and design

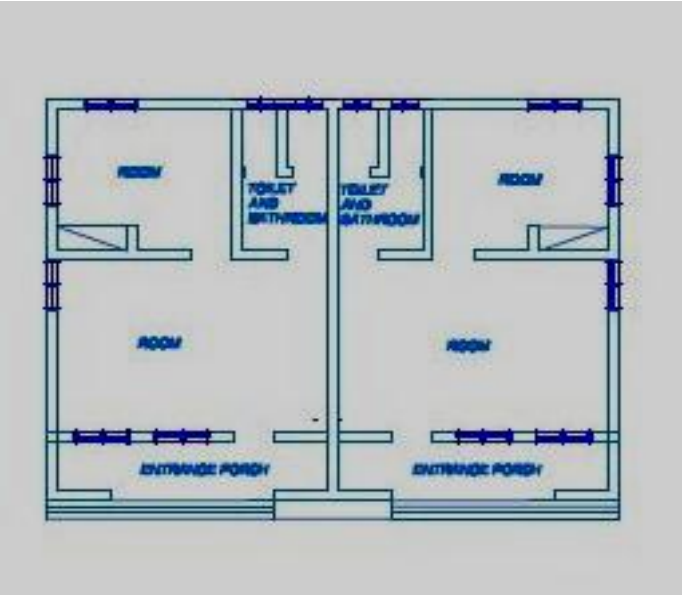


Figure 4.9: Floor plan of the students' rooms (chalet) in plateau state university.

(Source: Researchers field work, 2014)

Each chalet is made up of two rooms, the inner and the outer part being occupied by four students respectively. These chalets are accessible directly from the untarred road that bisects the hostel; to this effect shows that there is no adequate security. There is no defined paved ways, walkways and access to the rooms and the hostel as a whole, as indicated in Plate III and IV below. This tends to exposed and shows how vulnerable the students' residence is to the challenges of security and privacy. There are no defined boundary court as to student environment and the outside, which can be a threat to students' safety and property. This can affect the comfort of the students within the residence hall thereby reducing students' satisfaction within the hostel accommodation.



Plate III: Students residence hall at plateau state university.

(Source: Researchers field work, 2014)



Plate IV: Students residence hall at plateau state university.

(Source: Researchers field work, 2014)

As seen in plate III and IV above, the students' environment within the hostel indicates scanty and lack of proper landscaping. All these have defaced the hostel and reduced the aesthetic quality and the scenic views of the environment significantly. This exposes the hostel to physical environmental hazards, in addition, making the hostel vulnerable to harsh environment. Students tend to experienced lack of cooling within the residence, and this further justifies the level of dissatisfaction within the comfort zone of their residence.

Plate V below shows the available drainage which is not being properly maintained, surrounding being littered with dirt and refuse materials. The reckless dumping of refuse in drainages, within the environment is a common practice among the students due lack of waste management practices.



Plate V: Surrounding within residence hall at plateau state university.

(Source: Researchers field work, 2014)

4.5.4 Building materials



Plate VI: A typical free-standing chalet within the students' residence.

(Source: Researchers field work, 2014)

The students hostel (chalets) are free standing structures, thus the construction is simple. Locally available materials like sandcrete blocks were used for construction. The walls are made from sandcrete blocks and mortar for both interior and exterior plastering. Terrazzo floor tiles were used, pvc ceiling board were also used. Windows are made up of glass, sliding type with aluminum frame. The façade is very simple with an arc way entrance to the various rooms, with 400mm high flower base at middle of the semidetached chalets. Paint of different colours was used in painting as part of finishes which gives an aesthetic view to the approach of every chalet.

4.5.5 Provided facilities at plateau state university students residence

The basic units available in the hostel include; the room, toilets and bathroom facilities, and services provided.

i. Rooms

There is only one category of room type within the male and female hostel respectively. The design capacity of room is two students per room. Each room is divided into two parts, living room and a study bedroom. Rooms were furnished with inbuilt wardrobe, double bunked beds. However students tend to create spaces for cooking and study for convenience because these spaces were not provided.

ii. Toilets and bathrooms

These facilities were provided within each room which is a self-contained, accommodating both the inner and the outer occupants of the rooms sharing the same sanitary with an occupancy ratio of eight students to one toilet and bathroom facilities. There is adequate supply of water to these sanitary for students' utilization.



Plate VII: sanitary facilities at PLASU students' hostel

(Source: Researchers field work, 2014)

iii. Services provided

Services provided within the hostel are basically the supporting services which are value added services desirable within student hostel. These include cafeteria, auxiliary facilities (shops, barbing saloon, kiosks etc), water supply, electricity, waste management, borehole, clinic, and standby generator. The Student consistency comprises of shops within and at the exterior part of the building. This is centrally located within the hostel premises with other auxiliary services such as; shops for printing, photocopying and hair dressing. Other offices within the center are used by the school administration and other student's affairs and functions. There is provision for water and electricity services, although laundry services and recreational facilities were lacking. Behind the student centre is the hostel stand by generator that serves the hostel with electricity



Plate VIII: Students consistency within the residence hall

(Source: Researchers field work, 2014)



Plate IX: Stand by generator within the residence hall.

(Source: Researchers field work, 2014)

4.5.6 Inferences from student hostel plateau state university bokkos.

i. There are no defined entrance and access to the hostels, everybody tends to get access from every direction because there was no control as to entrance and check points. This has affected the level of students' satisfaction as to safety and security alongside privacy.

ii. Some of the supporting facilities needed within the students' hostel are inadequate; these include spaces like the common room, laundry services, and parking spaces.

iii. Administrative services includes functions like, hall administrator, warder, cleaners and maintenance units are required within students hostel to run the affairs, welfare of students, taking care of daily activities and maintenance of facilities. However this service is lacking subjecting students to lack of orderliness and organization.

iv. Lack of waste management thereby causing loitering of the environment by random disposal of refuges within the residence. This can cause bad scenery and having effect on the hygiene of the entire students and environment resulting to dissatisfaction.

v. The students' room design is abuse due to misused of spaces within rooms resulting to incompatibility in the use of space, thereby causing overcrowding and contradicting the need of privacy among students.

4.6 Case Study Two: Naraguta hostel, University of Jos, Plateau State.

4.6.1 Background

University of Jos, plateau state started as a Campus of the University of Ibadan in November, 1971. Its first home was the present Township campus of the University

which is located along Murtala Mohammed way, Jos. The Hostel Supervisor is in charge of the unit, assists the dean in the overseeing of activities of the various halls of residence which comprises: Naraguta Hostel, Students Village, Abuja, and Zion hostel. The Directorate presently therefore provides accommodation for students in the following categories: Final-year degree students, First-year (fresh) students, Clinical Medical /Students (i.e. 300, 500 and 600 level students), 400, 500 and 600 Architecture students, and Foreign Students. The location of the design of the hostels contains available facilities which include students' accommodation, bathroom and toilet facilities, cafeteria, students centre, borehole, sport facilities, and standby generator.

4.6.2 Site planning and landscaping

The university of Jos students' hostel adapts linear pattern for the site planning concept purposely design for both male and female students' accommodation specifically at the Naraguta hostel.

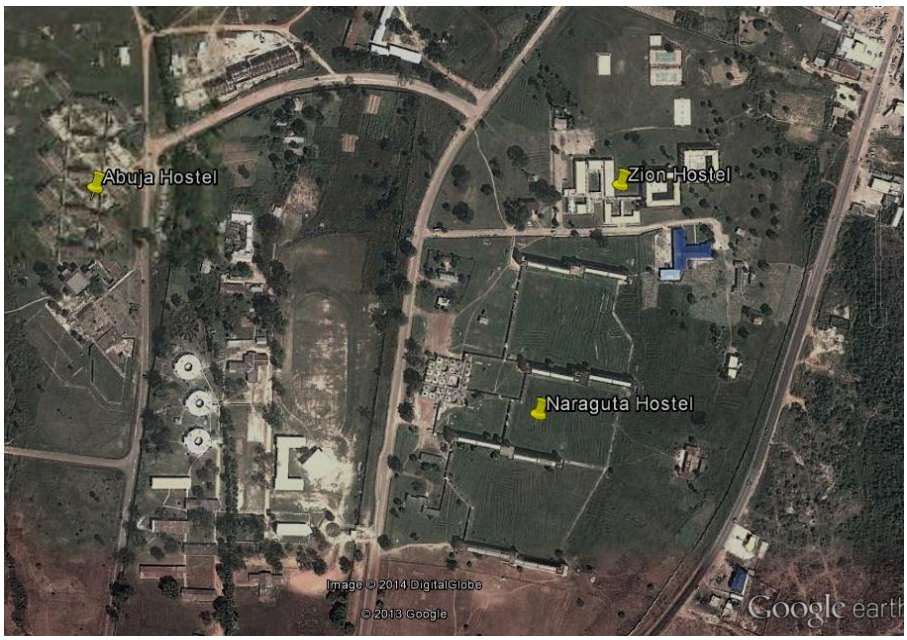


Plate X: Ariel view of university of Jos students' hostel.

(Source: Google earth, 2014.)

Naraguta students residence comprise of four different blocks which are free-standing three storey buildings, that forms the male and the female residence, with a student centre besides the sections of the students' hostels respectively, as shown in plate X above. The road is approximately 6m wide which is capable of accommodating double cars as it enhances accessibility into the hostels. The roads are also lined with trees and scanty street lights which enhances the scenery. There is a defined entrance gate used in checking ingress and egress for security purposes, to the hostel; both the male and the female hostel are directly accessible from the road that links to the hostel as shown in the plate above.



Plate XI: Main entrance to each block within the students' hostel.

(Source: Researchers field work, 2014)

The landscaping within the student hostel is minimal though both soft and hard elements were incorporated with the natural vegetation of the environment but left unplanned. Drainages are well planned and properly constructed, with defined paved ways, and access to the rooms and the hostel as a whole.

Laundry services are lacking while, Recreational facilities are insufficient. The plate below shows the students hostel at plateau state university and its environment indicating scanty and inadequate landscaping. This exposes the hostel to physical environmental hazards, in addition, making the hostel vulnerable to climate changes.

4.6.3 Spatial organizations and design



Plate XII: A View of naraguta students' hostel university of Jos.

(Source: Researchers field work, 2014)

Naraguta student residence is a mixed used system with both the male and female hall zone together; this tends to deprive the students from privacy. Each free-standing three storey (block) has 3 floors, each floor on the block has 2 wings, and on each wing on a floor has 9 rooms. Each of these rooms is in form of a semi-detached occupying 2 students respectively; therefore every room has a capacity of 4 students. This entails that each floor has 18 rooms with 72 students' capacity. These rooms are provided with sleeping area, cooking, and study areas, to accommodate four students respectively.

The rooms are accessible directly from the corridors which are protected with screen walls on ground floors; to this effect it shows that there is no proper control of security issues and environmental hazards.



Plate XIII: View of rooms on ground floor.

(Source: Researchers field work, 2014)

4.6.4 Building materials

The students hostel (blocks) are free standing storey buildings, thus the construction is complex. Locally available materials like sandscrete blocks were used for construction. The walls are made from sandscrete blocks and mortar for both interior and exterior plastering. Terrazzo floor tiles were used; concrete floor slabs were also used. Windows are made up of glass, top hung windows with aluminum frame. The facade is very simple with a wide central open entrance hall with open well staircase leading to the upper floors of the various rooms. Sanitary facilities are located at extreme end of each floor. Paint of different colours was used in painting as part of finishes which gives an aesthetic view to the approach of every block.

4.6.5 Provided facilities within naraguta students hostel

Drainages are well planned and properly constructed, with defined paved ways, and access to the rooms and the hostel as a whole. The student center is centrally located within the hostel. There is provision for water services and other auxiliary services such as; shops for printing, photocopying and hair dressing.



Plate XIV: Students centre university of Jos.

(Source: Researchers field work, 2014)



Plate XV: Source of water supply, Naraguta residence university of Jos.

(Source: Researchers field work, 2014)

The internal walls of the bathrooms are worn out, and lack of repairs within students' hostel. This could be due to lack of maintenance and pressure being exerted on the facilities



Plate XVI: sanitary facilities at Naraguta students' hostel

(Source: Researchers field work, 2014)



Plate XVII: Sport facilities at Naraguta students' hostel

(Source: Researchers field work, 2014)

4.6.6 Inferences from naraguta hostel university of Jos.

i. Findings also show that the students' residences use space (bedrooms) are disregarding terms of function resulting to incompatibility in the use of space, thereby causing overcrowding in space utilization as a result of overcrowding and lack of privacy. This has an effect on the level of students' satisfaction.

ii. The student residence in Naraguta hostel is a mixed used system with both the male and female residence zoned together; this tends to deprive the students of privacy.

iii. The landscaping within the student hostel is minimal, more needed to be incorporated within the natural environment, because this gives a sense of place and belonging as to students comfort.

4.7 Case Study Three: Student Village, University of Jos, Plateau State.

4.7.1 Background

The university of Jos student village is located along zaria-bauchi by-pass. The site is bounded on the eastern side by the river dilimi that bisects the hostel and the university permanent site. On the north-west is bounded by barakin russo village. The university student village is an attempt at innovating students housing in Nigeria. The village has a spacious setting and planning which makes it not conventional.

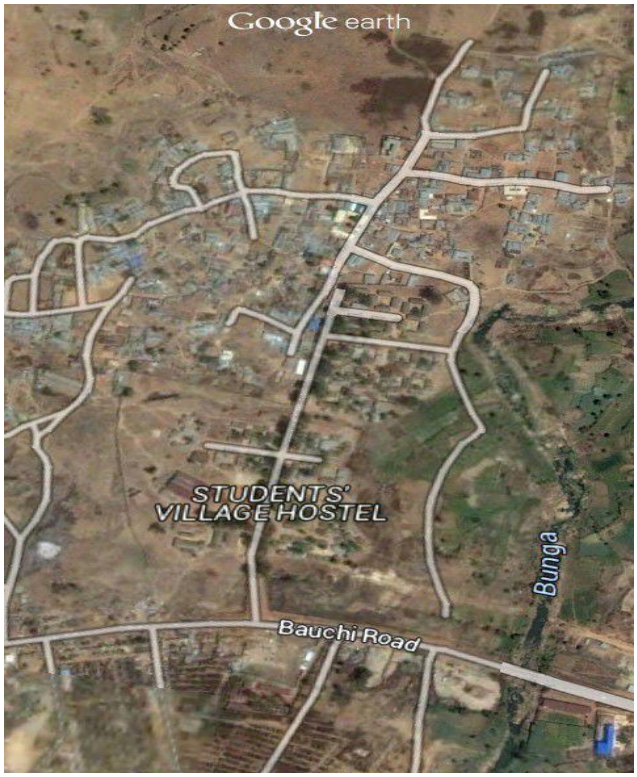


Plate XVIII: Student village university of Jos.

(Source: Google earth, 2014)

4.7.2 Site planning and landscaping

The students' residential units have a similar design to that of a cluster community of huts in a typical village setting and pattern. There is a defined entrance leading through the main gate to the hostel whereby the road bisects the students village, this allow for proper control by security officers. The hostel comprise of about sixteen main compounds. The cluster design brings about courtyards well landscape which improves ventilation and equally used as relaxation area. Green areas and the trees that line the streets and within the compound make up the landscape of the village, in addition were provisions of street furniture for sit outs. The network of walkways takes off from the main entrance and borders the road, with street lights which enhances scenery as shown in plate XIX below. Plate XX below, shows proper and good drainage system were put

in place whereby the walkways were grooved with concrete slabs place on top of drainage which allows for proper drain of water.



Plate XIX: Main entrance at student village university of Jos.

(Source: Researchers field work, 2014)



Plate XX: drainage system of student village university of Jos.

(Source: Researchers field work, 2014)

4.7.3 Spatial organizations and design

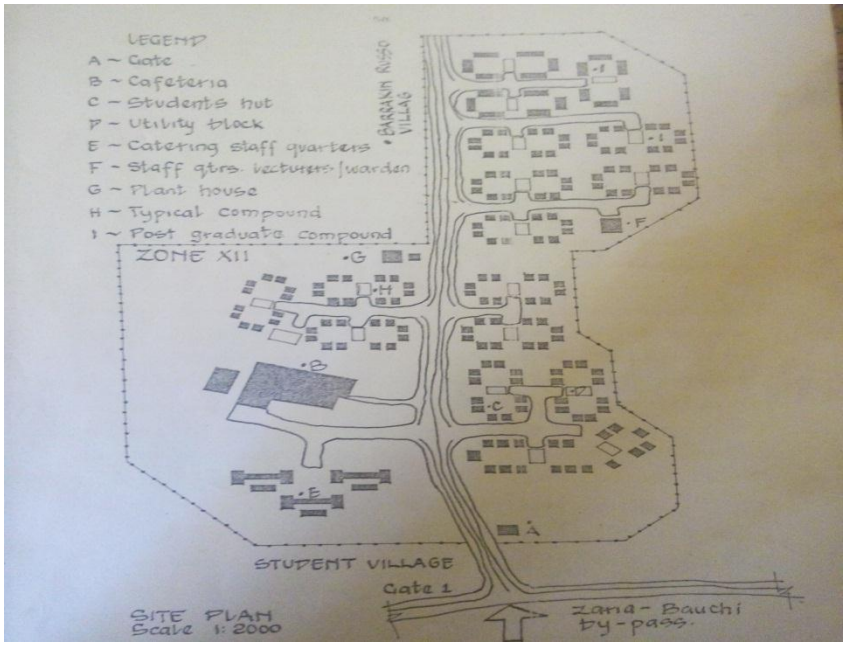


Figure 4.10: Site layout of student village university of Jos.

(Source: Researchers field work, 2014)

The student village is made up of sixteen main compounds with a sub-compound. Each compound comprise of twelve huts and a block housing sanitary facilities located at the centre of the compound breaking the visual link between the two sections of the compound as shown in figure 4.10. The design capacity for each compound is forty-eight students with four students per hut. Each hut is made up of two rooms each accommodating two students. Each room is divided into two parts, living room/study and a double bedroom with a wardrobe as a partition. In the actual design, the inner room functions as dressing room and bedroom while the outer rooms are for study and living as shown in figure 4.11 below. The same design applies to the postgraduate hostel aside the sanitary block which differs in user capacity ratio. The postgraduate ratio is one toilet, shower, urinal to six students while the undergraduate is one toilet, shower to eight students.

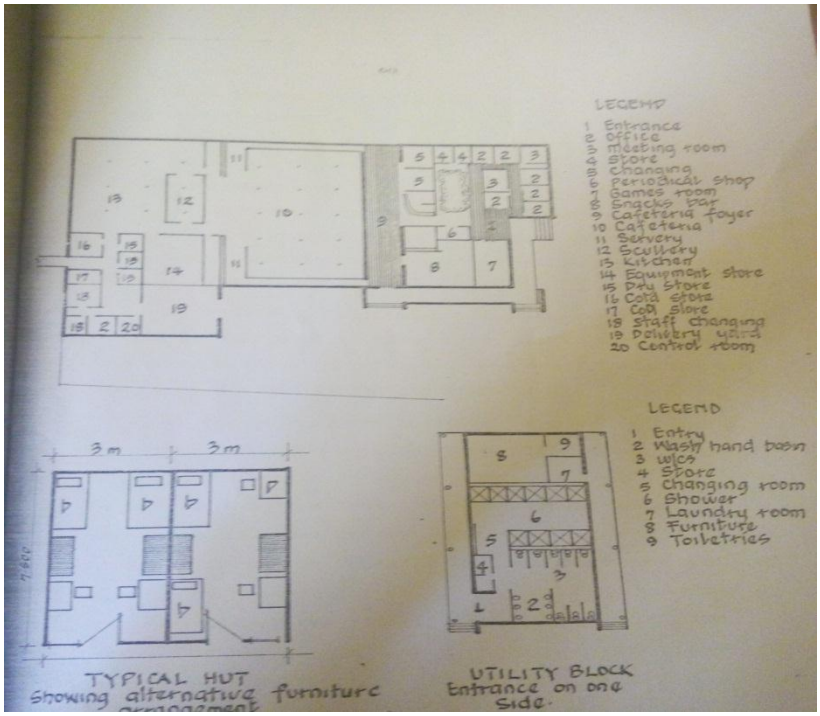


Figure 4.11: Room layout of student village university of Jos.

(Source: Researchers field work, 2014)



Plate XXI: drainage system of student village university of Jos.

(Source: Researchers field work, 2014)

4.7.4 Provided facilities within student village, university of Jos

Facilities available within the hostel includes; cafeteria, laundry services provided within the sanitary block of every compound. There is adequate supply of electricity and water. Recreational facilities are minimal and inadequate which do not cater for the general need of students and this tends to affect the level of students satisfaction. The cafeteria is located and position on the highest level of the site and then surrounded by the compounds. Due to its location, position and size, it's assumed to be the focus of the students' village. The cafeteria also integrates the administration and alongside the indoor sports activities as a whole. This includes the games room, snack bar, office for staff (catering and welfare), kitchen storage and shops.



Plate XXII: Source of water supply at student village university of Jos.

(Source: Researchers field work, 2014)



Plate XXIII: Student cafeteria in student village university of Jos.

(Source: Researchers field work, 2014)

4.7.5 Inferences from student village university of Jos.

i. Probably due to the site configuration, the whole hostel planning appears rigid because the main approach divides the hostel almost perpendicular not allowing for flexibility and expansion.

ii. The students' room design is disregarded resulting to incompatibility in the use of space, thereby causing overcrowding and the use of outer space for second rooms. To this effect, it has contradicted the need of privacy among students.

iii. As a result of the courtyard design concept adopted, there are diverse entrances within compounds, resulting to lack of proper security and this could be threat to property and life of students.

iv. Inadequate provision of recreational facilities and laundry services. Kitchenette or cooking spaces were not provided within the student reach, rather provision was made in the cafeteria and this is located far from the compound.

v. Access to the sanitary facilities is only one sided, favoring one side of the compound and making it inconvenient for students at the other section of the compound

4.7.6 Research question three: How do facilities determine user satisfaction in residence hall?

khozaei et al (2011) proposed that adequate physical facilities that support the educational process contribute in important ways to students learning. Therefore services provide such as proper lighting, privacy in rooms, safety in residence hall, getting access to water supply can improve the daily needs of students, thereby determining the satisfaction derived from such facilities. In addition, as illustrated from the case studies conducted and the inferences derived from such schools, it is concluded that the adequacy of provided facilities within the halls tends to affects students satisfaction of such facilities. This aspect is inclusive of size, relationship of spaces and their adaptability which entails student privacy. Therefore when facilities are adequate and available, factors such as access and circulation, safety, serviceability, within the residence hall are made, this enhances or improve the student level of satisfaction. Maintenance is an integral part of the functional performance of the building as it enhances comfortable living condition of students.

4.8 Summary of findings

The study led to some findings which are critical to the aim of the study. Such findings include the establishment of the fact that there are several issues and problems being faced in students' residence hall plateau state university. Incompatibility in the use of space, contradicted the need of privacy among students thereby causing overcrowding. Besides the poor maintenance of the residence, some facilities within the residence hall are grossly inadequate, not provided whereas some of such facilities are not in a good condition.

CHAPTER FIVE

5 DESIGN REPORT

5.1 Design Brief

University students' housing is among other important aspects of any University institutions which contribute immensely to the wellbeing of its students (users). Students housing tend to provide lodging, accommodation at an affordable rate and enable students to stay on campus and further increase their standards of living both academically and socially, with providing temporal and basic housing needs within the University. The government of Plateau state of Nigeria intended to have a student housing (students village), to be located in the plateau state university Bokkos. In the design for the students housing, clients such as (investors, stake holders etc) looks out for landmarks buildings, a structure and accommodation for the students that evoke a feeling of "living in a home away from home" something that creates communalism and sense of belonging and attachment, thus the architect is faced with the task of generating an idea, a concepts for the design.

5.2 General and specification requirements.

This section describes the accommodation and spatial requirements of the proposed students' village. To ease categorization of these requirements, four main functional spaces have been identified, namely; entrance/reception, students room, village centre and ancillary spaces. Specific spatial requirements of each of the identified categories are outlined below.

1. **Entrance/reception:** The entrance hall should provide for free movement into the students' residence, a security posts an information display point(s). An adequate circulation space should be provided to ease and cater for volumetric

traffic particularly at peak periods. Easy access to stairways (for public use) from the entrance hall should be emphasized in the design. The entrance/reception space will have the following offices.

i. Students' mini common room: (all-in-round, adaptable and flexible for all students relaxation) capacity (20-30)
ii. Utility room: the utility room should provide a built-in cabinet where equipment not used in day-to-day activities of cleaning/maintenance is kept.
iii. Security post: The security point should provide an official working area, personalized workspace.
iv. Janitor:
v. Mini shops/Refreshment

2. **Students Room:** The students' room is the smallest element and the basic space in the housing facility. It is the core environment of the student who spends many of the working hours here. It contains the study, place to sleep, socialize and dress. Planning studies:
    a. **Room:** Dimensions must accommodate
        i. Furniture sizes and design (wall mounted, free standing)
        ii. Furniture use spaces
        iii. Combination of furniture items
    b. **Room size:** (land shape) will affect two levels of possible room change
        i. Adaptability of furniture arrangement
        ii. Divisibility of space- physical or visual separation of activities.

c. **Bathroom:** provision of bathroom facilities is coupled with the N.U.C. guide lines specified a ratio of one toilet, one bathroom to six students. Construction cost might be reduced by building gang toilets for a large group of students but long term economy may be achieved when the students take care of the facilities as there is a feeling of ownership hence a decrease in maintenance and cost while improving the human quality of the environment for the students.

d. **Sanitary facilities:** Gang toilets would be avoided because the design is not flexible for use by non-students during vacation. Laundry for each residential community will be provided, as drying lines will be provided in a secure places

e. **Kitchenette:** A kitchenette should be provided for students who prefer to do cooking in the suite arrangement.

3. **Village Centre:** This will be the focal point of activities of the entire village, which would comprise of cafeteria, recreational facilities, students center, administration, students common room and commercial facilities.

    i. **Cafeteria:** This is the dinning section would include main kitchen, staff office, storage facilities. Students' capacity (200-300) seat at a time. Outdoor eating spaces would be made to attach adjoined to the cafeteria.

    ii. **Recreational facilities:** Recreational spaces and facilities are very important in providing an environment conducive to social interaction between students. Outdoor and indoor sporting facilities which include basketball court, open air sit outs/gardens and volley ball court would be provided.

iii. **Mini study room:** An inexpensive study area is quite adequate for providing spaces for effective study for the students within the residential community.

iv. **Commercial facilities:** Shops would be provided, students center which allow for commercial activities and laundry would be provided.

v. **Administration:** Office spaces for hall administrator, hall warden would be provided in the village Centre; it's easier to centralize the staff office for better communication between the students and also governing officials of the village.

vi. Ancillary spaces within the village: road circulation should offer good services to the cafeteria and enable students parking with consideration of security measures. Waste management collection and disposal as well as consideration of fire hazards.

5.3 Background Information of Study Area

Potential site in relation to the main design need to be put into consideration as the site for the proposed students' village is located in plateau state university, bokkos local government area of plateau state. Plateau state is in Nigeria middle belt with a total area of 26,899 square kilometers, with an estimated population of about three million people (census 2006). The city is located on the Jos Plateau at an elevation of about 1,238 metres or 4,062 feet high above sea level. Plateau is located in the tropics region of Nigeria between latitudes 9°56′ north of the equator and longitudes8°53′ east of Greenwich meridian. Plateau state is bounded to the north by Kaduna and Bauchi state,

while Benue state is at its southern border. It is flanked in the east by Taraba state and in the west by Nassarawa state.

5.4 Site Location

Bokkos local government area is the home to the plateau state university, located 77kilometer southwest of Jos, endowed with lots of historical attraction. PLASU is located between latitude 9° 22′ 13N″, longitude 9° 57′ 61″ E, elevation 4546ft. the university layout has been calculated to have a land area of about 315.82 hectares with a potential plots allocated to the university facilities and administration, also comprises of the land use budget (PLASU Map).

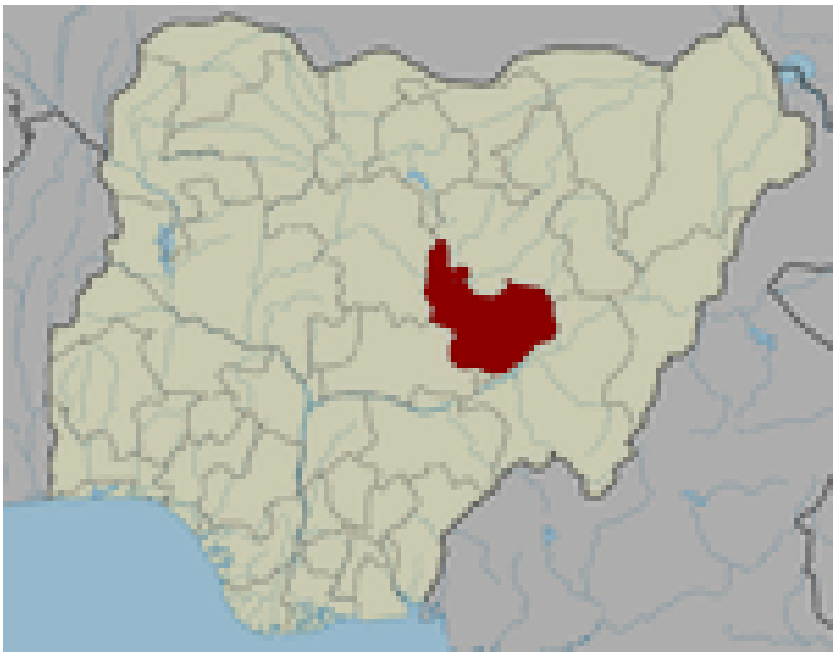


Figure 5.1: Nigeria map showing plateau state

(Source: www. Plateau state gov.org)

5.5 Site Selection Criteria

In achieving a sustainable design process, site selection is the first step in the design. This site was chosen in line with the PLASU master plan to provide the university with student residence hall to accommodate students on campus. This forms the site for the

proposed students' village design, which is chosen in line with the following characteristics: Land use compliance: The site is indicated for students hostel in the land use map, Potentiality of the site to support students activities, Security, Proximity to administrative facilities, Accessibility/location and Utility services.

5.6 Site Topography and Climate

5.6.1 Physiography

The area is characerised by gently undulating plains, rock craters, the rock pedestals, terrain interlaced by sparsely distributed vegetation, beautiful landscape with an undulating highlands, hills ranging from 500-1600 meters above sea level as well as artificial hills and mining paddocks dumps that are seen all over the area. The site also supports the rain forests vegetation of tall trees and grasses. Thus the site has lot of potential for landscaping to suit the functional and aesthetic requirements of the project, as indicated in plate XXIV below.



Plate XXIV: Topography of site

(Source: Researchers field work, 2014)

5.6.2 Soil

The soil underlying the plateau state university site is derived from the sediments, alluvium located in streambeds throughout the territory, consisting largely of sand with rare gravel beds and local deposits of clay as seen in plate XXV below. The suitability for development, land use varies with depth occurrence, texture, erodability, run-off potentials and drainage. Severe constraints for foundations, streets and underground utilities occur when soils are shallow, strong, locally high in swelling clay or poorly drained.



Plate XXV: Soil nature of site

(Source: Researchers field work, February, 2014)

5.6.3 Vegetation

Vegetation is characterized by park savannah; Riverine depressions are typically skirted by fringes of thickets and high trees. There are occasional patches of forest or heavily wooded areas. Park savannah is typically a stratified community with a discontinuous canopy, shrubs and green layer.

Characterized by a few grasses with shrubs, this confirms that due to its position close to low land, vegetation is mostly evergreen but not so as we go against the gaining altitude. Site to be well landscaped and trees planted and reduce solar radiation and avoid soil erosion.

Utilities: Existing electricity, sewage, water and telecommunications network available on site

5.6.4 Climate

Though situated in the tropical zone, yet a higher altitude means that Plateau State has a near temperate climate with an average temperature of between 18 and 22°C. The average lower temperature of Plateau State has led to a reduced incidence of some tropical diseases such as malaria. Table 5.1 below gives the mean monthly climatic conditions of Jos. The dry month is January with 0 mm of precipitation with an average rainfall of 194-218 within the months of June to September. Most precipitation falls in July, with an average of 298 mm.

Table 5.1:Mean Climatic Data for plateau State

Climate data for Jos													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	28.8 (83.8)	30.5 (86.9)	31.9 (89.4)	31.8 (89.2)	29.8 (85.6)	27.6 (81.7)	25.4 (77.7)	24.7 (76.5)	26.8 (80.2)	29 (84)	29.8 (85.6)	28.9 (84)	28.75 (83.72)
Daily mean °C (°F)	21.3 (70.3)	22.9 (73.2)	24.9 (76.8)	25.7 (78.3)	24.5 (76.1)	22.7 (72.9)	21.4 (70.5)	20.9 (69.6)	21.9 (71.4)	22.9 (73.2)	22.7 (72.9)	21.5 (70.7)	22.78 (72.99)
Average low °C (°F)	13.9 (57)	15.4 (59.7)	17.9 (64.2)	19.7 (67.5)	19.2 (66.6)	17.9 (64.2)	17.4 (63.3)	17.2 (63)	17.1 (62.8)	16.9 (62.4)	15.7 (60.3)	14.1 (57.4)	16.87 (62.37)
Precipitation mm (inches)	0 (0)	1 (0.04)	17 (0.67)	77 (3.03)	180 (7.09)	194 (7.64)	298 (11.73)	280 (11.02)	218 (8.58)	53 (2.09)	4 (0.16)	2 (0.08)	1,324 (52.13)
Avg. rainy days	0	0	1	7	11	15	20	19	15	4	0	0	92
Mean daily sunshine hours	9	9	8	7	7	7	5	5	6	8	9	9	7.4

(Source: **World Weather - Local Weather Forecast www.tutiempo.net)**

Temperature: The highest temperatures are recorded during the dry season between March and April. Lower temperatures abound during the rainy season especially the month of July and August due to dense cloud cover and the harmattan period between December and February.

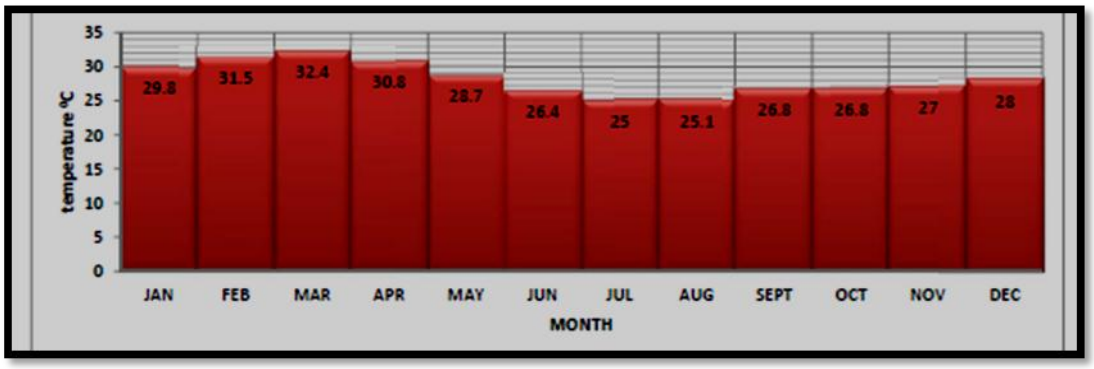


Figure 5.2: Showing Temperature chart

(Source: Nigerian Meteorological agency Plateau state Inspectorate.)

Humidity: High humidity levels are attained during the rainy season. Humidity values generally drop during the dry season, from November – March.



Figure 5.3: Showing Relative Humidity chart

(Source: Nigerian Meteorological agency Plateau state Inspectorate)

Rainfall: The mean annual rainfall varies from 131.75 cm (52 mm) in the southern part to 146 cm (57 mm) on the Plateau. The highest rainfall is recorded during the wet season months of July and August.

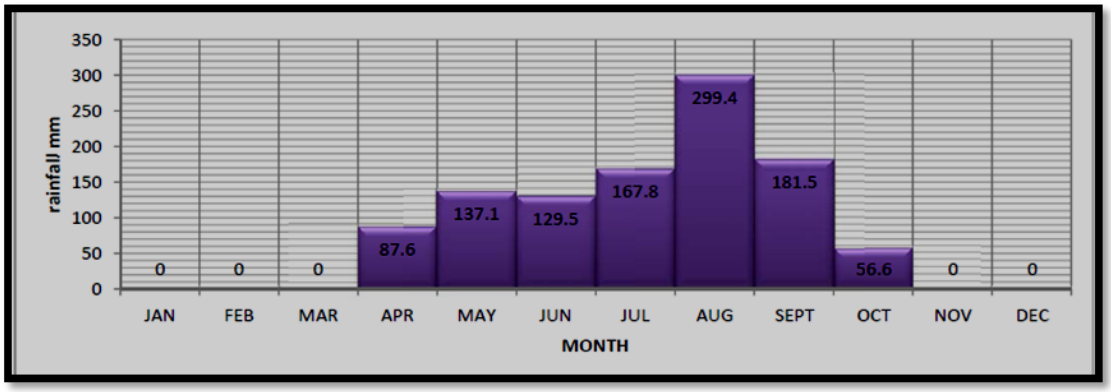


Figure 5.4: Showing Rainfall chart

(Source: Nigerian Meteorological agency Plateau state Inspectorate.)

Wind: Two major air masses dominate the Jos Plateau: the Tropical Maritime air mass and the Tropical Continental Air mass. The tropical maritime air mass is formed over the Atlantic ocean of the south of the country and is therefore warm and moist. It blows from south-west to north-east the tropical continental is developed over the Sahara desert and thus is warm and dry and blows from north-east to south-west. The tropical continental air mass comes with the dry season while the tropical maritime air mass, the wet season.



Figure 5.5: Showing Wind speed chart

(Source: Nigerian Meteorological agency Plateau state Inspectorate.)

Sun and Cloud cover: There is a general increase in the total hours of sunshine further north of the Atlantic coast. The sunshine ranges from a minimum of 1300 hours in the

Niger delta to over 3200 hours in the extreme north-east of the country. High level of sun shine is experience during the dry season from the month of October to march with less than four (4) hours per day in August.

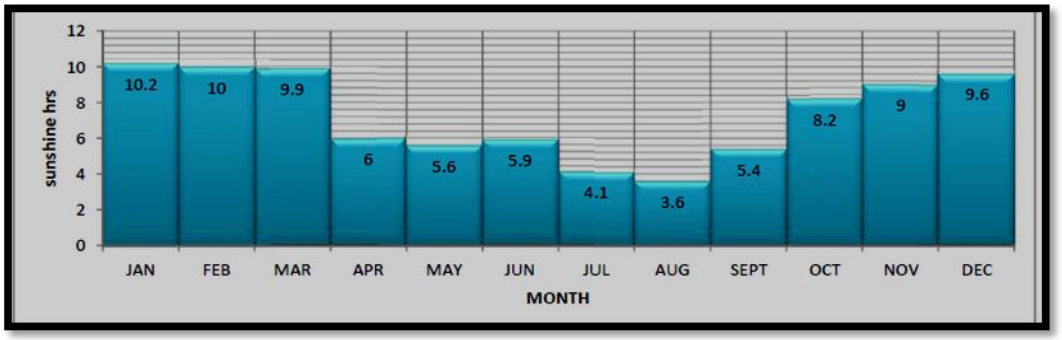


Figure 5.6: Showing Sunshine chart

(Source: Nigerian Meteorological agency Plateau state Inspectorate

5.7 Site Conditions

5.7.1 Access

The site is accessed through the tarred road to the north. It provides same access to the agricultural farms. There is provision for other alternative routes. To the one way exit from the postgraduate hostel through the diram village.

5.7.2 Vegetation

The site is characterized by few grasses, with shrubs; this confirms that due to its position close to low land, vegetation is mostly evergreen. Site to be well landscaped and trees planted to reduce solar radiation and avoid soil erosion.

5.7.3 Utilities

Existing electricity, water and telecommunications network available on site.

5.7.4 Topography

Low land with 0.5% gradient sloping towards the west end of the site. The site slope gently towards the west direction. The direction of this slope would be used for drainage, because it is easier due to the natural force of gravity.

5.7.5 Air Movement

i. North East Trade Winds: Tropical continental air mass which is dry, cold and dusty, influences harmattan. The wind velocity is very high in almost half the year. Most in October to February. A proposal to apply soft landscape (Trees and shrubs) to be used as shield and air filter so as to curb the dust effect.

ii. South West Trade Winds: tropical maritime air mass which influences rainfall around April to October. This has influence on local climate as it is moist due to its development over Atlantic Ocean. Fenestration should best be in this direction to maximally harness the cool breeze for thermal comfort.

iii. Orientation of Buildings: Longer side of the building should face north-east direction to reduce hot discomfort. Due to solar radiation, shorter sides of the building should then be on the east- west sides.

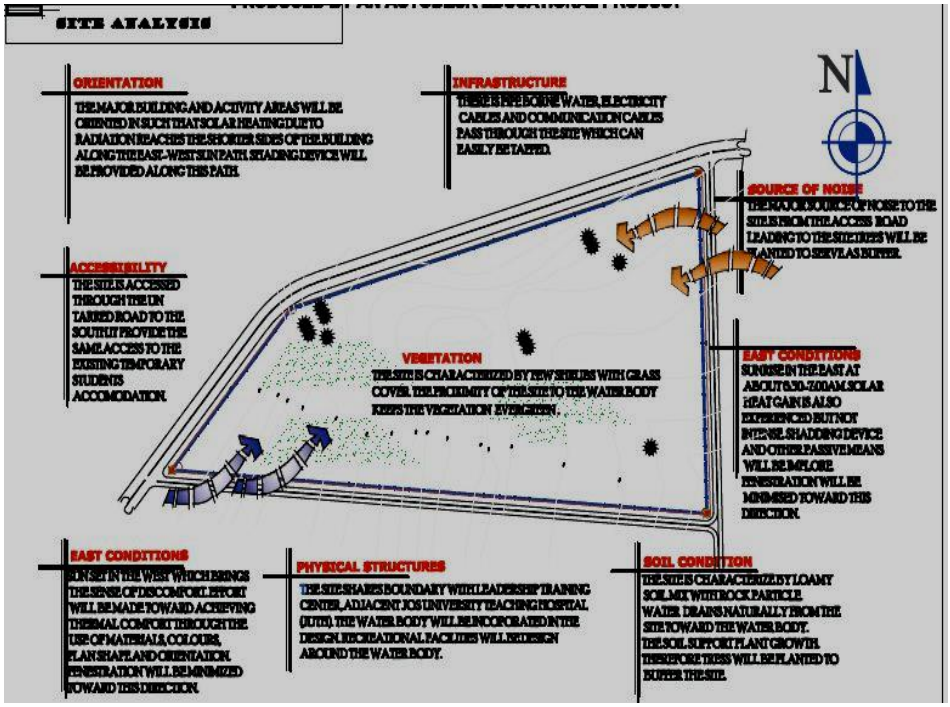


Figure 5.7: showing Site analysis

(Source: Researcher's work 2014)

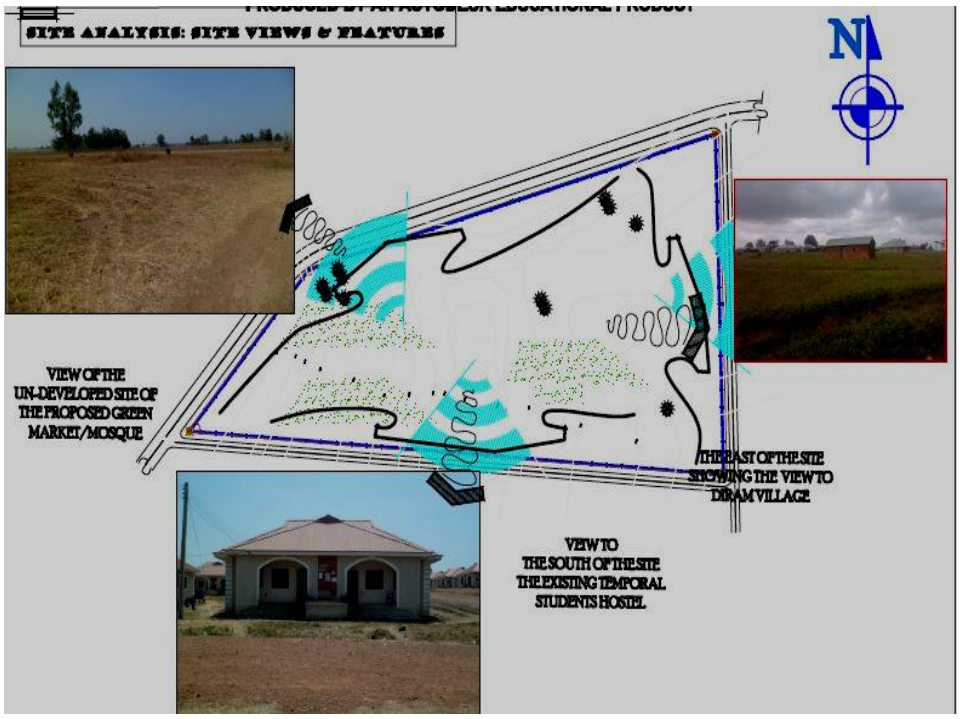


Figure 5.8: Site analysis showing views

(Source: Researcher's work 2014)

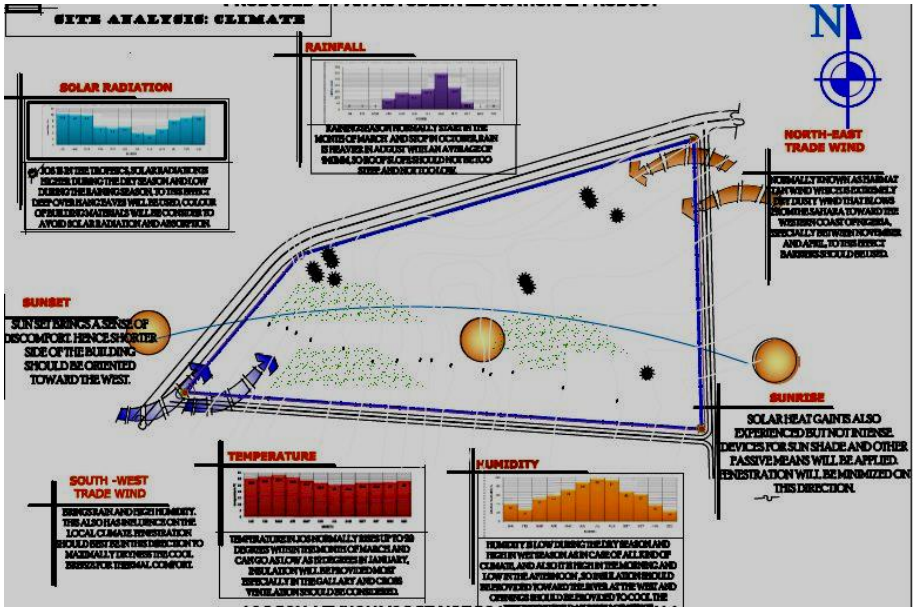


Figure 5.9: Site analysis showing site climate

Source: Researcher's work (2014)

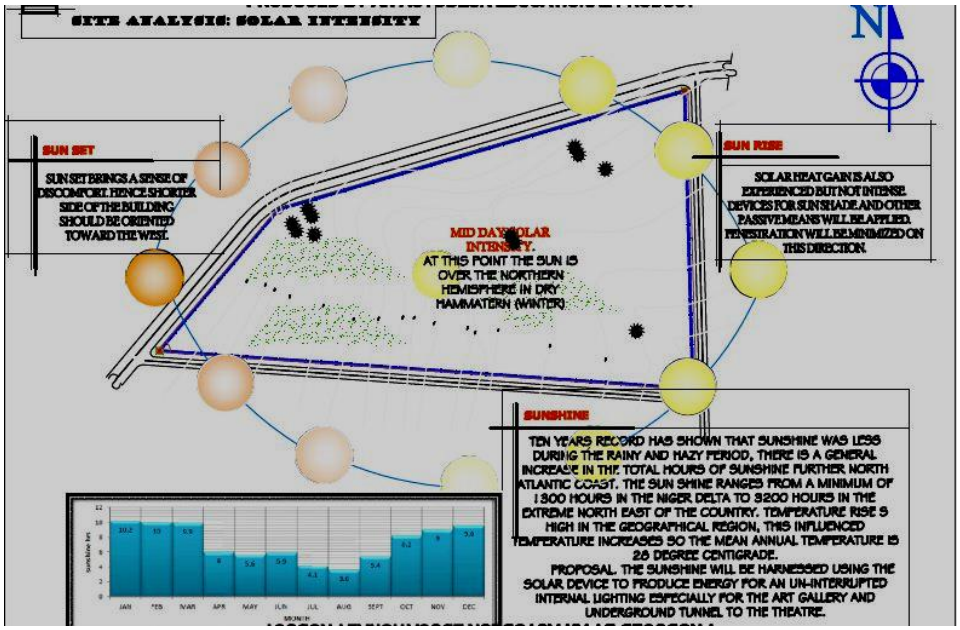


Figure 5.10: Site analysis showing sun path

(Source: Researcher's work (2014

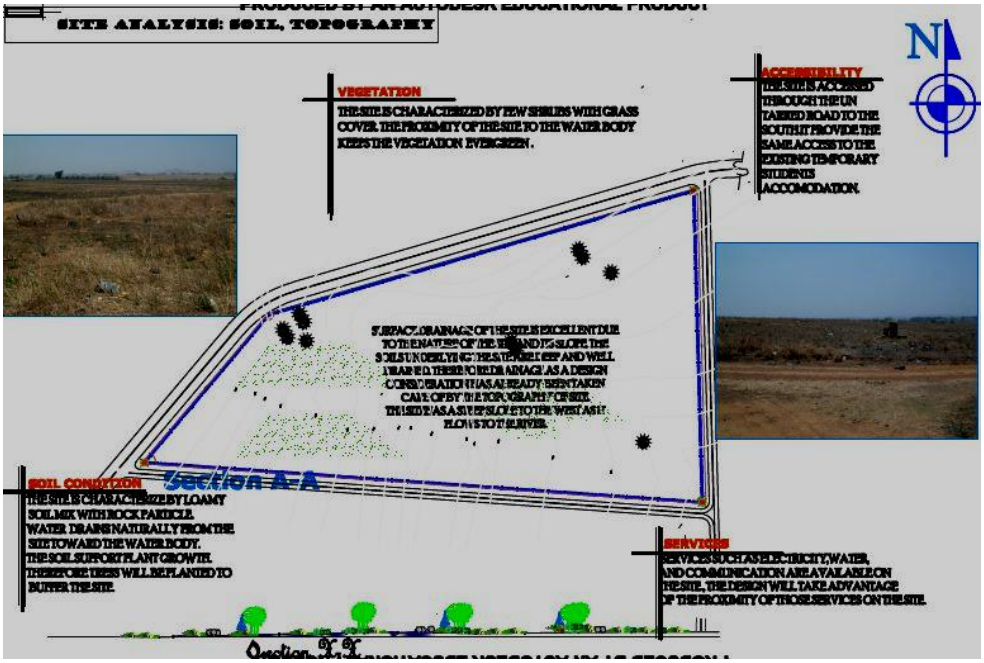


Figure 5.11: Site analysis showing soil condition, Topography & Vegetation.

(Source: Researcher's work 2014)

5.8 Design Considerations

In order to meet up with the requirement of a comfortable and functionally designed building, some design issues have to be put into consideration. The following considerations are to help achieve the best

5.8.1 Comfort

The design creates an environment that would give students the opportunity of a multi-sensory experience of nature, materials, forms and scales, connection of inside and outside spaces. For example, the courtyard is to experience shades, the rain, winds, sounds and silence. The site and buildings are covered with plants and gardens. There are

sit out areas all round, and small corners for students to relax and interact. The building shape is to solve some issues of thermal balance

5.8.2 Accessibility

This has to include an integrated transport system that prioritizes the need of the building's occupants, providing a multiple circulation system with secondary and tertiary systems. There will be means of access for both able and physically challenged person; accommodation strictly on ground floors which will aid the physically challenged persons. Wider stairs to aid mass exit.

5.8.3 Acoustics and zoning

The transport of sound through structure should be controlled. Functional zones should be provided with surface or sub-surface materials that dampen impact sounds and isolating cavities to interrupt the structural transmission of sound. Noise levels is controlled within zones by appropriate choices of material finishes on floors, walls and ceilings, and the shaping of interior spaces to prevent flutter and unwanted noise within the residential community by the elimination of small scale air gaps in doors, windows and partition walls. It's hard paved to however act as a reflecting surface and aggravate the sound of voices and footsteps from people in the courtyard. Grass and planting are employed to break up and absorb sound.

5.8.4 Lighting

Effort will be made towards achieving natural lighting in order to minimize artificial lighting that demands energy. Lighting is important, especially light colours for interior walls to produce a brighter indoor environment. To improve the lighting, central

courtyards were employed at the core of the building and the compounds respectively. Also, flowing glazing above window levels was used at the top to bring in day light as well as ventilation.

5.8.5 Circulation and flexibility of facilities

While gangway lengths and widths are calculated as part of the fire escape route, also provide the circulation through the units of the residential communities, with possible additional gangways from the units through the open court for dry land.

a. **Entry points:** The students can enter the residence units from the entrance hall, which joins every single hut that forms the residence communities and the entry points need to connect directly with the staircase leading to other floor levels.
b. **Exits and escapes**: From each floor level of the individual huts, two separate exits is provided for the first 26 student out of 52 students to be accommodated within a floor level. Each exit from the individual huts must lead directly to a place of safety.

The aim is for all in the residence communities to be able to escape to a place of safety within a set period of time. Routes within the building will have fire-resistant enclosures. There are special requirements for all doors opening onto fire escape routes.

5.8.6 Energy efficiency

There will be use of renewable source of energy with the aim of reducing the total fuel energy required and so reduce the cost of maintenance. As for services, wireless and piped services will be conduit depending on the requirements and engineers advice. Wireless connections services may be required for administration and the students use.

They can be incorporated into the mini study areas, open air gardens and sit outs within the village centres and in individual rooms.

5.9 Design Concept.

The design concept of the students' village is to offer the students the opportunity to live in a home away from home. Residential units are design in a home like sense and character, which constitute social groups of 12-48 to be developed into household units. The student village will be design to form an environment that is in line with the scale of local architecture. This is not adopting the shed like structures but the traditional forms of African village setting which would be single and two storey buildings which would be articulated in the neighbourhood.



Figure 5.12: A cluster of circular huts of the village setting

(Source: Researcher field work, 2014)

Dwelling units will be arrange in clusters forming residential communities which surrounds the village center to form the entire village set up. A variety of courtyard will be form to give a very flexible design. The location of the village Centre will be related to the flow of the students' traffic. A system of pedestrian path will lead to the village Centre. Outdoor spaces will be treated with some importance with indoor spaces to provide a relaxed atmosphere conducive for study and interaction between students.

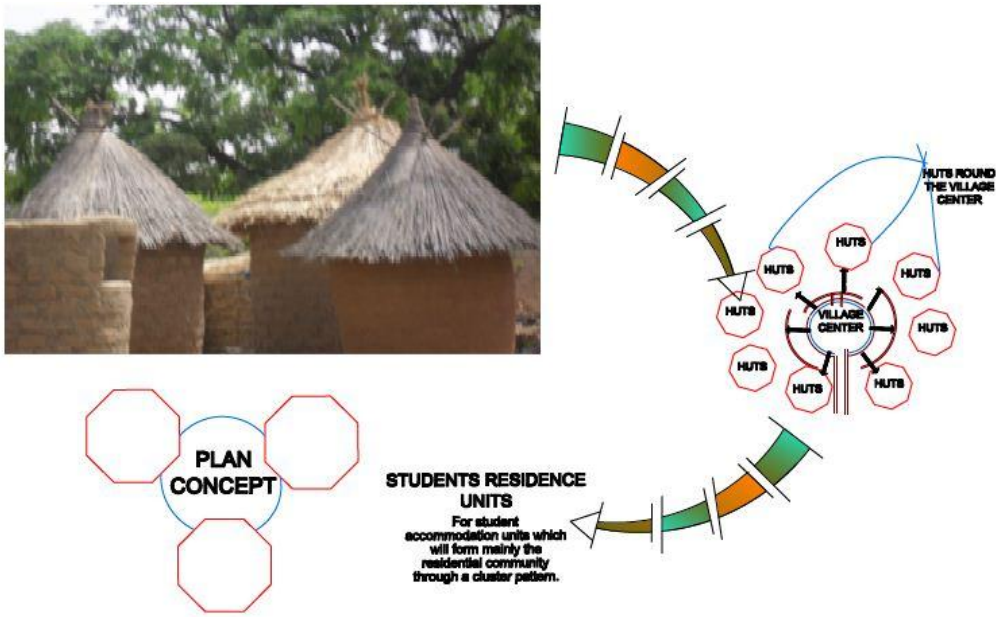


Figure 5.13: Showing plan concept of the proposal

(Source: Researcher's work, 2014)

5.10 Site Planning

Site planning is an important aspect of design. The site is planned to accommodate flexibility of usage. This was achieved by separating the facilities so that each can function on its own without one interfering the relationship of one from the other. The site was planned in such a way that from the entrance gate, one can visually see a balance and

symmetry in the whole complex and a distinctive main entrance into the building was not left out. Vehicular and pedestrian entrances were separated for safety reasons. In planning the village; features of an ideal campus residence will be adopted with cluster arrangement encouraging social interaction between students while the students' village centre is centrally located would act as a social area for the entire students' populace. General noise in students' residences will be eliminated by lower concentration of students in a courtyard. Parking spaces are provided for the staff as well as students and the public. The parking is at the entrance by both side, further in by the left is the staff parking at the administration area, while the trucks parking is by the side of both residence for loading and offloading of goods and services including waste disposal management.

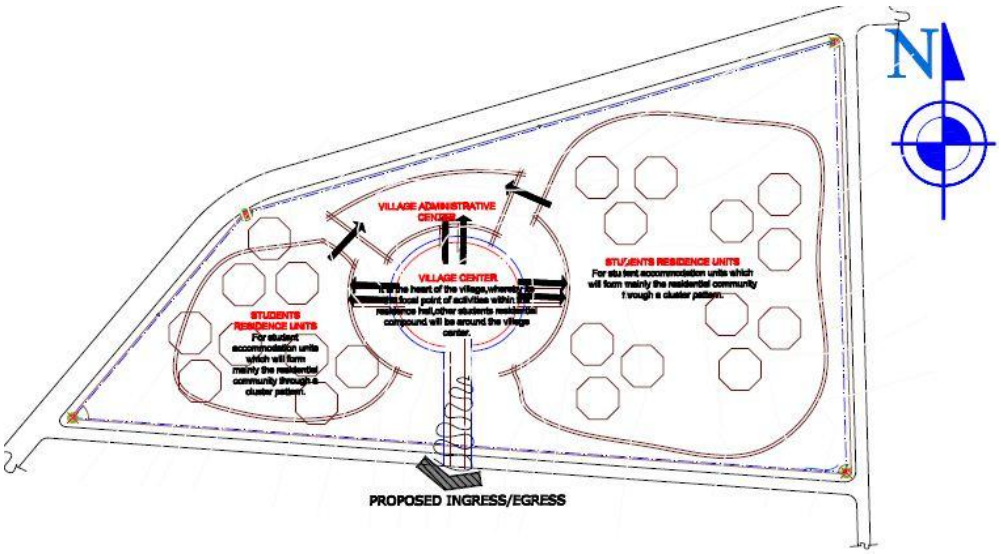


Figure 5.14: Showing site plan concept of the proposal

(Source: Researcher's work, 2014)



Figure 5.15: Site plan of the proposal

(Source: Researcher's work, 2014)

The central zone of the site comprise of the village center (heart of the students residence) village within the students village. This includes; administration block, students center, commercial open eatery, students garden, sport facilities (basketball and volley ball), commercial laundry, students common room and open green areas with parking spaces. Apart from the village centre which is centrally located, the accommodation is located at the two extreme end of the site for both female and male respectively, enclose within a courtyard adopting the concept of an African village with cluster community surrounding the village.(as shown in figure 6.2). The housing unit took the circular plan form which was adopted from the traditional compound setup. It was deliberately cited at the two ends of the site towards the northeast and northwest direction so as to achieve some level of privacy by zoning it away from the village center and access is made from within the

village Centre through pedestrian circulation. The courtyard within the accommodation zone was utilized for students cafeteria and sit outs within their reach. The provision of these additional facilities was to boast the students' residency aspect of the design.

5.11 The Building Form

The forms of the buildings were targeted to be fully inspired by nature and this is to express a meaning to the minds of the observers. At the end, a metaphor is to be used to say what the building is expressing. This is due to the fact that observers have subjective way of perception of the building form. Its expression is one but the perception is diverse. All these are to be achieved from the natural forms harnessed



Figure 5.16: showing the building form of the proposal

(Source: Researcher's work 2014)

5.12 The rooms

All rooms provided by private balconies which open to the surrounding; both the double rooms and room of four are such that each student can have total visual privacy within a

definable territory. The rooms are so arranged that there are basic facilities provided which includes the toilets and bathroom, kitchenette, in-built wardrobe, sleeping area, reading table and laundry which is shared within the community.

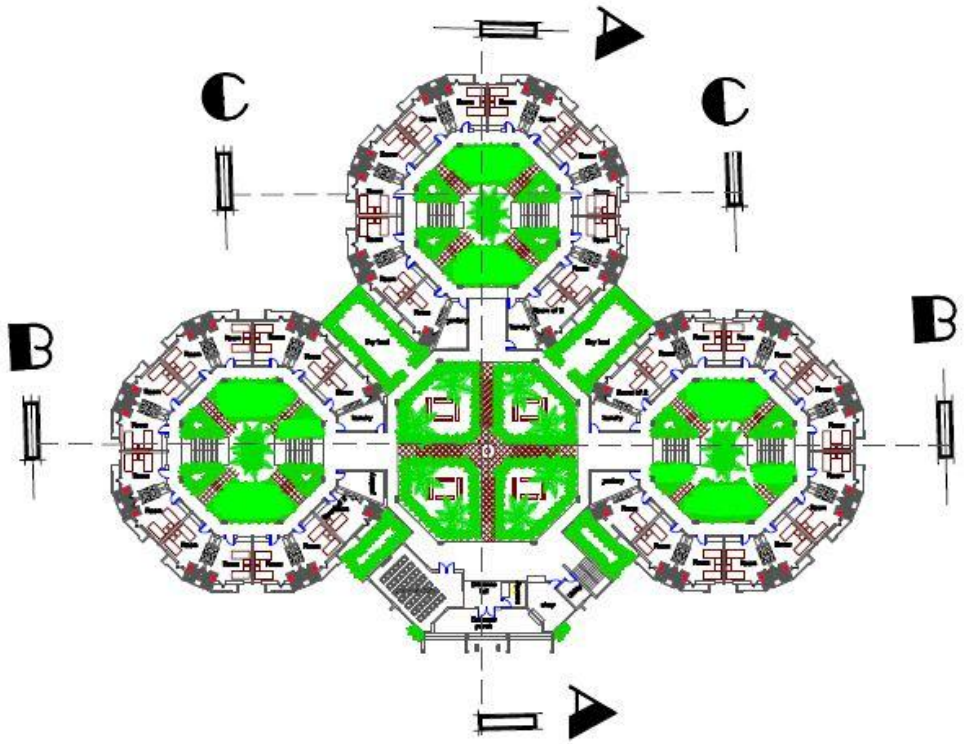


Figure 5.17: Ground floor plan of the proposal

(Source: Researcher's work 2014)

The double room which are mainly for the final year students are of 8m2 with 3m2 private balconies, like all the other rooms they have all basic facilities provides. All furniture is movable but so modulated that they could fit into wall compartments as though they were built in. The room of four are also rooms that are of 15m2 with balconies of 4m2 having similar facilities with that of the double rooms.

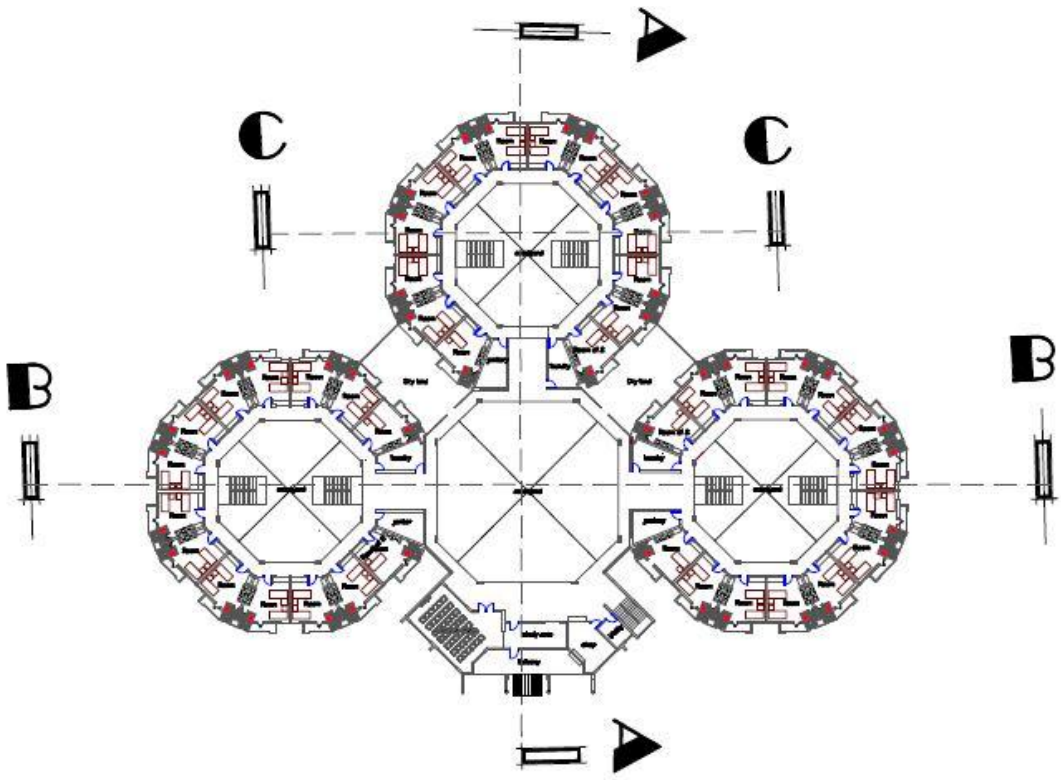


Figure 5.18: first and second floor plan of the proposal

(Source: Researcher's work 2014)

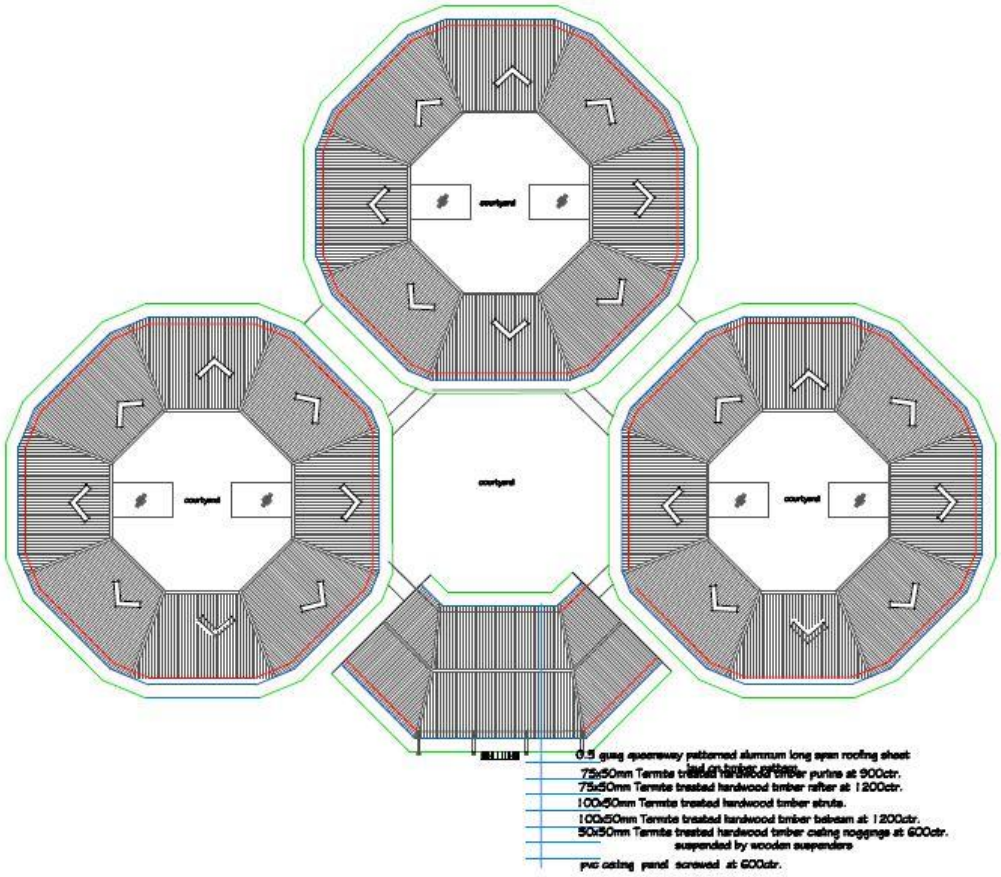


Figure 5.19: Roof plan of the Proposal

(Source: Researcher's work 2014)

5.12.1 The courtyard

The figure below shows how cool air replaces warm air and the pattern of their movement. Each courtyard is segmented in other to reduce the overall height and ensure the effectiveness of ventilation.

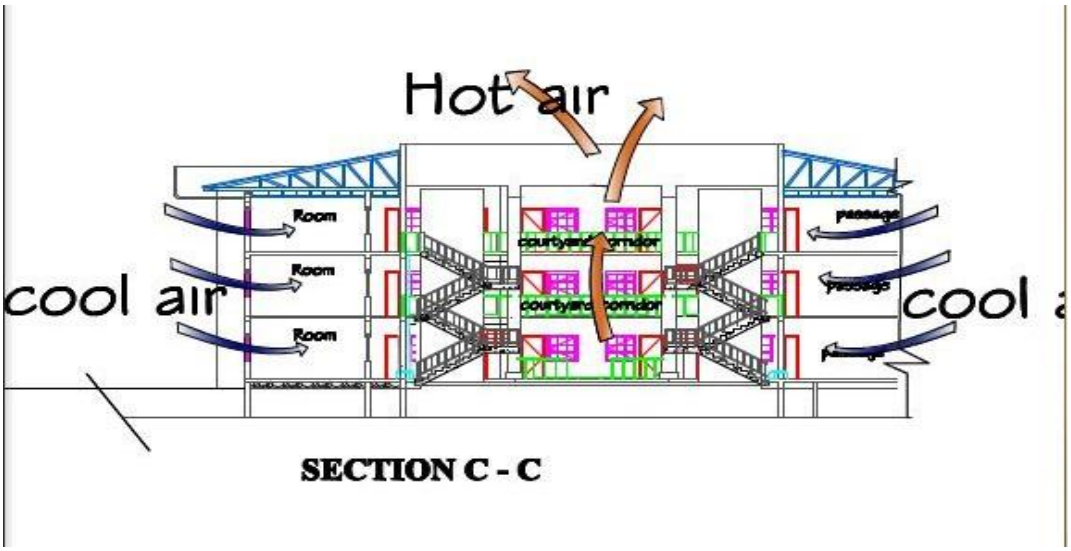


Figure 5.20: Section of the courtyard

(Source: Researcher's work 2014)

5.12.2 The Elevation.



Figure 5.21: Showing approach elevation

(Source: Researcher's work, 2014)



Figure 5.22: Showing side view of elevation

(Source: Researcher's work, 2014)

5.12.3 Building material and Technology

The building materials are mostly Titanium (It is known for its corrosion immunity, strength, durability and low maintenance cost.), glass PTFE (Polytetrafluoroethylene), PTFE is a coated fiberglass, with high strength and long service life) steel and concrete. Other materials used for finishes are wood, plastic and ceramics. The material finishes provide a good blend with the required taste of interior design. Entrance porch and the reception (security points), rooms and balconies are made of quarry floor finishes. Special stainless steel rounded railings of glass embedded are vertically and horizontally connected by fasteners and so, could be dismantled. The doors are swing at the entrance; aluminum glazed, flush, wooden panel and plastic doors. For the conveniences, the whole set of the interior of conveniences are customized from the factory. It is well finished and serviced. All it needs is the coupling which takes mechanical and electrical engineers to do that.

The courtyard opens all through the floors from lower level, connecting to corridors and circulates ventilation through the building. The flexible photo-voltaic panels are laid over

the shells and tower in selected areas where the solar radiation intensity is mostly felt. The roofing material for adopted is long span aluminum sheet.

5.13 Services

5.13.1 Water supply

The water supply is directly tapped from the source of the university distribution mains. Alternative water supply is provided as follows, a bore hole with pump and over head tanks for different levels. Another one is storm rain which is harvested and used in the servicing of conveniences and watering of flowers and lawns. The water is distributed through the building through the p.v.c. pipes of different diameter depending on the required efficiency of supply.

5.13.2 Electricity

The power will be tapped from the closet stepped from the 11kw step down transformer through underground armored cable. Nacaco wire type will be used in the conduit internal wiring.

5.13.3 Waste

Solid and liquid waste disposals are made through the p.v.c. ducting and pipes of various grades in diameters and strength (150mm-300mm). Areas of high pressure will be swept at the bends. Inspection chambers are placed at intervals, bends and places of different altitude. The toilets are in a ratio of one in every room of double and four students. Garbage is disposed through the provided trash cans within the hostel at strategic locations on each floor.

5.13.4 Ventilation

The ventilation system is 60% natural through the use of bioclimatic approach applied to the building. Shading against direct sunlight and radiant heat in the rooms influenced the used of parapets. This is also influenced by the use of balconies.

5.14 Schedule of Accommodation

	ADMINISTRATIVE SECTION				
S/No.	**Spaces**	**Standard Requirement**	**Adopted (m^2)**	**Number**	**Area(m^2)**
1	Entrance porch	2.8m^2 per person	19.32	1	
2	Reception/security centre	2.8m^2 per person	18.3	1	
3	Hall administrator's office.	min.20m^2 per person	18.6	2	
4	warder's office	min.20m^2 per person	18.6	2	
5	Staff office.	min.30 m^2	24.6	2	
6	General store			1	
7	Shop.		12.2	3	
8	Utility room	min.9 m^2	16	3	
9	Toilets		2.52	4	

	ACCOMMODATION				
S/No.	**Spaces**	**Standard Requirement**	**Adopted (m^2)**	**Number**	**Area(m^2)**
1	Rooms.	13m^2 minimum en-suits	20.67	1	

2	Toilets and bathroom(self-contain)	1.55-2.2 m^2 per person	2.52	1	
3	Reading area.		1.72	2	
4	Kitchenette.	m^2 per seat	1.82	2	
5	balconies		2.82	2	
6	Toilets	1.55-2.2 m^2 per person	2.52	1	

	SERVICES WITHIN COMPOUNDS				
S/No.	**Spaces**	**Standard Requirement**	**Adopted (m^2)**	**Number**	**Area(m^2)**
1	Laundry		15.66	9	
2	Janitor	5.4-7.2m^2	15.66	9	
3	mini-common room		46.98	3	
4	mini-study areas with balconies		19.32	2	
5	Shops		12.2	2	
6	sit outs (open court)			3	
7	utility room	5.4-7.2m^2	7.13	1	
8	Cafeteria -kitchen -cold/dry store -dining space -catering office -servery area -outdoor cooking -workers changing	1.5-2.0 m^2 per seat 0.5-0.70 m^2 per seat	256 158.34 44.8	1 1 1 1 1	

	VILLAGE CENTRE				
S/No.	**Spaces**	**Standard Requirement**	**Adopted (m^2)**	**Number**	**Area(m^2)**
1	Students common room	m^2 per seat	153.99	9	
2	Recreational/leisure -Indoor games room -Outdoor games/sports	m^2 per seat		9	
3	Open eatery	1.6-1.8 m^2 per seat			
4	Student welfare office		18.6	1	
5	Landscaped open air garden			1	
6	Parking	1space to 3student per parking	2.5		
7	Commercial facilities - laundry - shops -Snacks bar - Open eatery		12.2	 1 4 2 1	
8	Student centre			1	
9	Toilets	1.55-2.2 m^2 per person	2.5		

CHAPTER SIX

6 CONCLUSION AND RECOMMENDATION

6.1 Summary

This research work is built on the subject of evaluating architectural determinants of user satisfaction in university residence halls. The problem definition being that Nigerian universities with focus on plateau state university bokkos are experiencing series of challenges such as inadequate accommodation, lack of maintenance, and coping with the pressure being exerted on the available facilities due to overpopulation, thereby affecting the level of satisfaction among students. The research studied various findings emanating from a concise literature review in which the answers to the problems identified were studied and provided accordingly. Case studies were selected of its relevant to plateau state university base on; location, due to socio-cultural values, opinions and behaviors of students, and their social context and environment. Careful analyses of the cases were carried out using specific variables and research emphases on the principles governing the functioning of the students' residence, the form of the building as well as the concept and spatial organization of spaces which birthed the symbolic connotation related to the subject of user satisfaction. Thus, it was used for generating design and planning concept for the proposed students' village, which would facilitate the ground for positive experience for the users.

6.2 Conclusions

The intent of this research was to evaluate the determinants of user satisfaction in university residence halls specifically to the study area of plateau state university bokkos. The research has revealed various determinants of user satisfaction among student housing applying the criteria of residential housing. Therefore by the study of residence hall in university housing, the following key determinants were deduced; **Units** (rooms, toilets, bathroom, cooking area, and study area) also known as the **physical determinants** of satisfaction, **Facilities** (common room, cafeteria central catering services and parking area) also known as **social factors**, **Housing services (**administration, safety and security, privacy, water supply electricity supply, waste management, student welfare, internet services) also known as **service quality**, and **Neighbourhood facilities** (recreational facilities, worship centers, outdoor area, sport facilities, gardens) also known as **social factors**.

6.3 Recommendations

On the basis of the findings and conclusions reached in this study the following recommendations are made:

i. Students can perform well in their studies if they have good, comfortable living conditions in their student housing. Thus, resident satisfaction must be considered to address student housing needs as the criteria for understanding student residential satisfaction are similar to those used in assessing conventional housing satisfaction. Therefore tertiary institutions should enforce strategies of achieving and ensuring that students' perception and needs are duly considered when it comes

to students housing, as that will enhances the academic performances of the students.

ii. A functional building performance of the students housing deals with how the building support the students need; these includes the students comfort (relationship of spaces and their adaptability) base on facilities and services rendered within the residence, privacy (when the student have a greater degree of freedom in their accommodation) and safety (having a sense of belonging and security. However, rather than engaging in just the designs of such students housing, architects, property developers and the entire building industry are recommend to incorporate these students needs and perception at initial stages of the conceptual work, that can maximized more satisfactory housing provisions and minimized dissatisfaction as much as possible.

iii. With very few exceptions, schools performed badly on transformational design that can bring about change and enhances the comfort and accommodation need of the students in learning environments. Users need and perception will enhance the skills of architects and housing administrators to ascertain specific actions that can minimized dissatisfaction among student housing.

6.4 Contribution to Knowledge

Most designs of university students housing is only concerned with the sleeping area for students with less concerned of the students priority and needs, however this research has help understood the determinants of user satisfaction within student residence hall, and applied in the design of students residence. Some key factors was deduced that the major

users satisfaction stem from students privacy, (creating a greater degree of freedom within the residence), comfort and safety. This was achieved by;

i. Providing a self-contain residence type which gives students a level of privacy and comfort belonging to space.

ii. Sanitary conditions within students residence also has impact on the students level of satisfaction either positively or negatively, this research has contribute positively by providing private sanitary for students which will go a long way to supplement maintenance cost and increase students hygiene.

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APPENDICES

Appendix A: Questionnaire Schedule

Department of Architecture,

Faculty of Environmental

Design

Ahmadu Bello University

Zaria

Kaduna State

12, February, 2014.

Dear respondent,

LETTER OF INTRODUCTION

Good day, iam dunfu blessing bitrus a postgraduate student of ahmadu bello university zaria, department of architecture and presently conducting a research on EVALUATION OF ARCHITECTURAL DETERMINANTS OF USER SATISFACTION IN UNIVERSITY RESIDENCE HALLS. I kindly request for your response as it will help in the success of the research. The respondents of this questionnaire will remain anonymous and all responses will be treated with confidentiality.

Thanks you for your anticipated co-operation.

Yours faithfully

……

Dunfu Blessing Bitrus

SECTION A (PERSONAL DATA)

(Please tick the relevant boxes)

1. Gender male ( ) female( )
2. To which age category do you belong?
   (a) 16-20 (b)21-24 (c)25-29 (d)30 and above
3. What is your current year of study
   (a)100 (b) 200 (c)300 (d)400 (e)500 (f)600 (g)postgraduate
4. What is your course of study? …….

SECTION B (HALL SITUATION)

5. Have you stayed in hostel? Yes( ) No( )
6. How long have you stayed in hostel?
   One semester ( ) one session ( ) two sessions ( ) three sessions ( ) four sessions ( )
   If others, specify? …….
7. Indicate your level of significance as to reasons for choosing residence hall(hostel).please rate the following from 1-5

   1-very unsatisfied **2**-unsatisfied **3**-neutral **4**-satisfied **5**-very satisfied

REASONS	**1**	**2**	**3**	**4**	**5**
Safety and security	( )	( )	( )	( )	( )
Privacy	( )	( )	( )	( )	( )
Nearness to school facilities (e.g library,lecture halls)	( )	( )	( )	( )	( )
Affordable rentage	( )	( )	( )	( )	( )
Free accommodation	( )	( )	( )	( )	( )
Quality of services provided (e.g water, light)	( )	( )	( )	( )	( )
Provided facilities (e.g common room, laundry)	( )	( )	( )	( )	( )
Only accommodation available	( )	( )	( )	( )	( )

8. Which of the hall types do you give preference to? Using scale of 1-5, please tick the relevant.

1-not preferable **2**-less preferable **3**-neutral **4**-preferable **5**-mostpreferable

HALL TYPES	**1**	**2**	**3**	**4**	**5**
Shared rooms	( )	( )	( )	( )	( )
Self-contained rooms	( )	( )	( )	( )	( )
Luxury rooms	( )	( )	( )	( )	( )

If others, please specify ……

9. Indicate how often is your hostel being maintained?(tick appropriately please)

Very often ( ) often ( ) fair ( ) poor ( ) very poor ( )

10. Indentify your views about the arrangement or space organization of your hall of residence? Please rate the following from 1 to 5.

1-very unsatisfied **2**-unsatisfied **3**-neutral **4**-satisfied **5**-very satisfied

SPACES	**1**	**2**	**3**	**4**	**5**
Room sizes	( )	( )	( )	( )	( )
Blocks/halls	( )	( )	( )	( )	( )
Toilet/bathroom	( )	( )	( )	( )	( )
Cafeteria	( )	( )	( )	( )	( )
Common room	( )	( )	( )	( )	( )
Overall layout of your hostel	( )	( )	( )	( )	( )

SECTION C (USER SATISFACTION)

11. Indicate your level of satisfaction/agreement to the following aspects in hostels. Using a scale of 1 to 5

1-very unsatisfied **2**-unsatisfied **3**-neutral **4**-satisfied **5**-very satisfied

VARIABLES	**1**	**2**	**3**	**4**	**5**
(Physical environment)					
Bedroom	( )	( )	( )	( )	( )
Toilet/bathroom facilities	( )	( )	( )	( )	( )
Laundry	( )	( )	( )	( )	( )
Cooking area	( )	( )	( )	( )	( )
Privacy	( )	( )	( )	( )	( )

(Social factors)

Common room	( )	( )	( )	( )	( )
Worship centres	( )	( )	( )	( )	( )
Central catering facilities (e.g shops,saloon)	( )	( )	( )	( )	( )
Outdoor area-gardens	( )	( )	( )	( )	( )
Sport facilities	( )	( )	( )	( )	( )
Cafeteria	( )	( )	( )	( )	( )
Parking area	( )	( )	( )	( )	( )

(Service quality)

Safety and security	( )	( )	( )	( )	( )
Internet facilities	( )	( )	( )	( )	( )
Students welfare services	( )	( )	( )	( )	( )
Administration services	( )	( )	( )	( )	( )
Electricity	( )	( )	( )	( )	( )
Water supply	( )	( )	( )	( )	( )
Waste disposal	( )	( )	( )	( )	( )
Drainage system	( )	( )	( )	( )	( )

(Morphological configuration)

Study area	( )	( )	( )	( )	( )
Organizational layout	( )	( )	( )	( )	( )
Overcrowding	( )	( )	( )	( )	( )

SECTION D (FACILITIES PERFORMANCE)

12. Indicate your level of agreedness to hostel enabling your program/activities in school (tick in the appropriate boxes)

    Good ( ) average ( ) poor ( )

13. How has on-campus living improve your academic performances and wellbeing activities? Please give your comment.

    ……

14. Indicate the adequacy of facilities and services provided in your residence hall, ranking from 1 to 5.

1-very inadequate **2**-inadequate **3**-neutral **4**-adequate **5**-very adequate

FACILITIES	**1**	**2**	**3**	**4**	**5**
Safety and security	( )	( )	( )	( )	( )
Privacy	( )	( )	( )	( )	( )
Quality of services rendered (e.g water, electricity)	( )	( )	( )	( )	( )
Provided facilities (e.g bedroom, bathrooms)	( )	( )	( )	( )	( )
Central catering facilities (e.g shops, saloon)	( )	( )	( )	( )	( )
Outdoor area-garden/ recreational areas	( )	( )	( )	( )	( )

15. What are those reasons you consider positive and valuable that makes your stay satisfactory and worthwhile in students' residence hall? (Please tick where necessary) scaling from 1 to 5

1-very unsatisfied **2**-unsatisfied **3**-neutral **4**-satisfied **5**-very satisfied

POSITIVE	**1**	**2**	**3**	**4**	**5**
Safety and security	( )	( )	( )	( )	( )
Electricity	( )	( )	( )	( )	( )
Quality of services rendered (e.g water, electricity)	( )	( )	( )	( )	( )
Central catering facilities (e.g shops, saloon)	( )	( )	( )	( )	( )
Nearness to school facilities (e.g library, lecture halls)	( )	( )	( )	( )	( )

16. Rank your responses on the following variables as to why you will prefer to relocate to off-campus rather than to stay on-campus. Scaling from 1-5 as indicated.

1-strongly disagreed **2**-disagreed **3**-neutral **4**-agreed **5**-strongly agreed

VARIABLES	**1**	**2**	**3**	**4**	**5**
Water supply	( )	( )	( )	( )	( )
Privacy	( )	( )	( )	( )	( )
Freedom	( )	( )	( )	( )	( )
Overcrowding in hostel	( )	( )	( )	( )	( )
Quality of services	( )	( )	( )	( )	( )

Provided facilities	( )	( )	( )	( )	( )
Affordable rentage	( )	( )	( )	( )	( )
Only accommodation available	( )	( )	( )	( )	( )
Nearness to school facilities	( )	( )	( )	( )	( )

SECTION E (GENERAL COMMENTS)

Please comment on question 17-18

17. What should be maintained or changed as regard facilities in your residence hall?

……

……

18. In your opinion what should be done to improve the living conditions on hall residence?

……

……

We recognized how busy you must be and greatly appreciate you taking time to complete this questionnaire.

Contact this cell phone number (08063181073) for any contributions or comments about the research.

THANK YOU.

Appendix B: Interview Questions

1. What is the student level of study?
2. What is the student course of study?
3. What is the duration of stay in the hostel?
4. What are the reasons for choosing hostel?
5. Are you satisfied with your hall of residence/hostel? If yes why? And if No, why?
6. What are the provided facilities within residence hall that enhances your level of satisfaction?
7. What is the issues face within the students' residence?
8. What are the problems encountered within the students residence that affects the level of satisfaction.
9. In your own opinion (students) what should be done to improve the level of students' satisfaction within residence halls.

Appendix C: Checklist

Table AC : check list for assessment of performance and situation of selected hostel under study

VARIABLES	FACILITIES	AVAILABILITY	EFFICIENTCY	PRESENT STATE	REMARK
units	• Rooms • Toilets and bathrooms • Cooking area • Study area				
facilities	• Common room • Cafeteria • Central catering facilities • Parking area				
housing services	• Administration • Safety and security • Privacy • Water supply • Electricity • Waste management • Student welfare • Laundry services • Internet				

	services
neighbourhood facilities	• Recreational facilities • Worship centre • Outdoor area • Sport facilities • Gardens

(Source: Researcher's work, 2014

Appendix D: Sample Size

Table AD: Table for determining sample size from a given population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Source :(http://research-advisors.com)

Note: "N" is population size

"S" is sample size.

Appendix E: List of Drawings

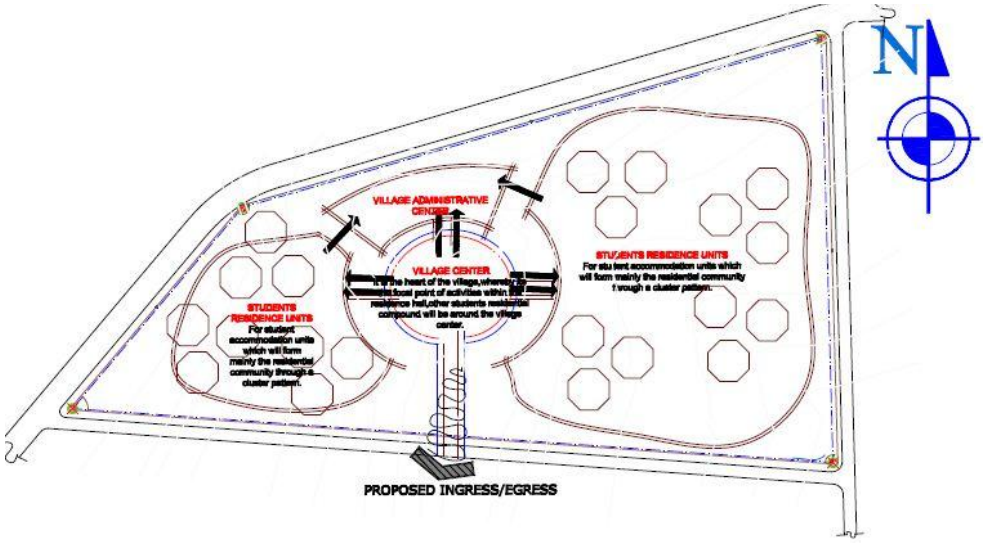


Figure AE 1: Site Zoning Concept



Figure AE 2: Proposed Site Plan

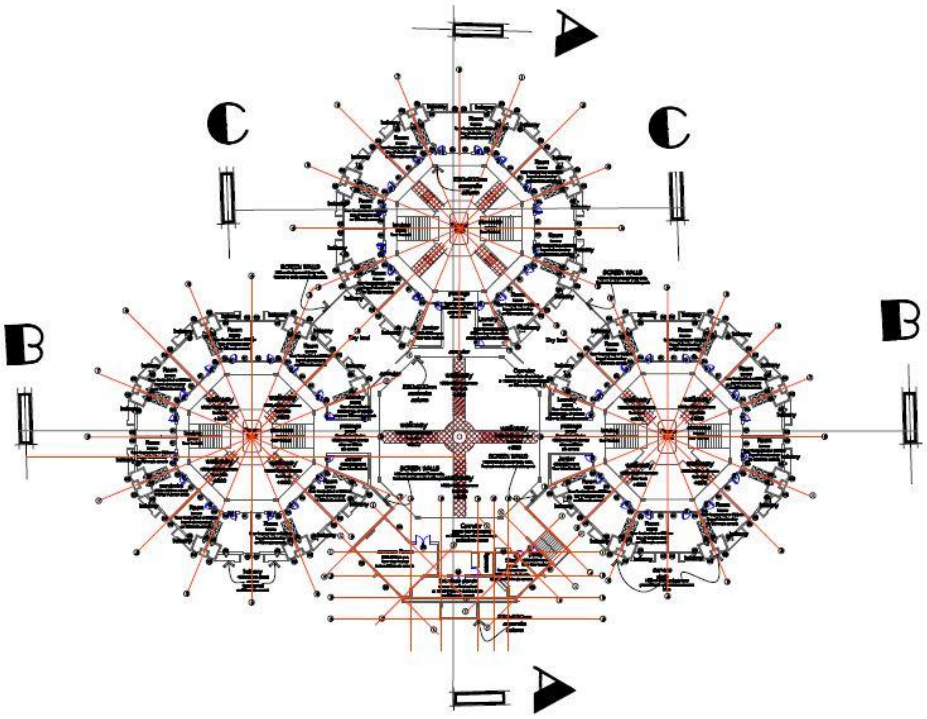


Figure AE 3: Proposed Ground floor plan

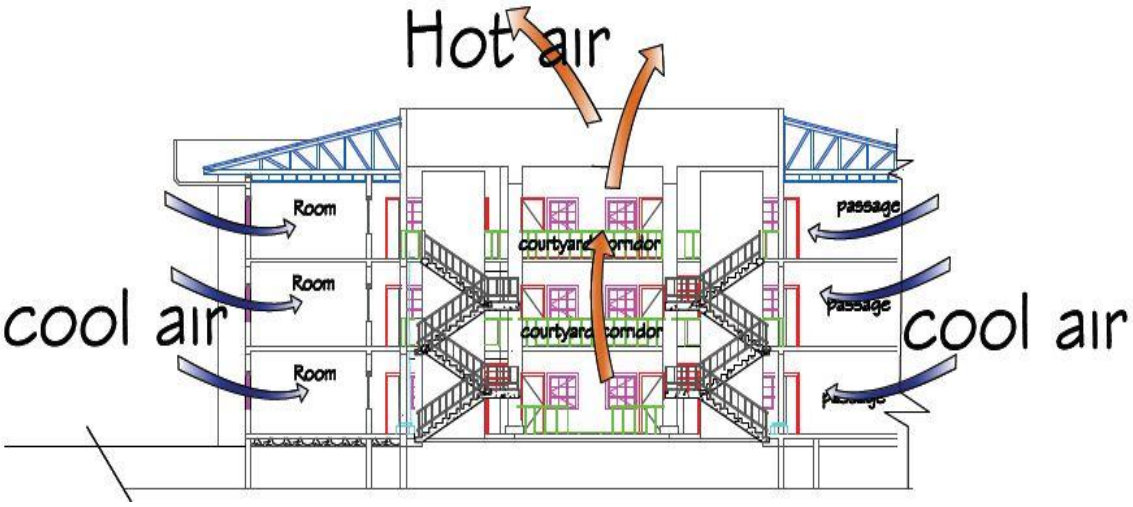


Figure AE 4: Section C-C through courtyard

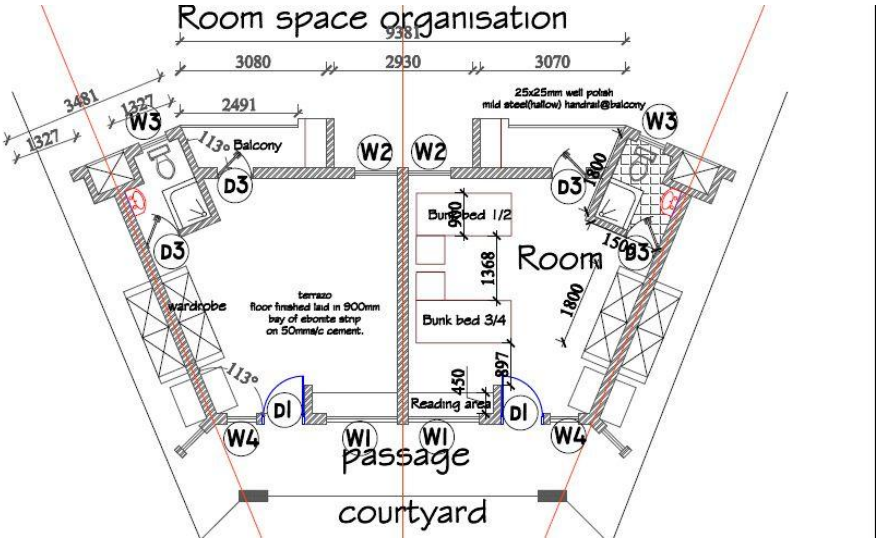


Figure AE 5: Proposed Room layout Plan

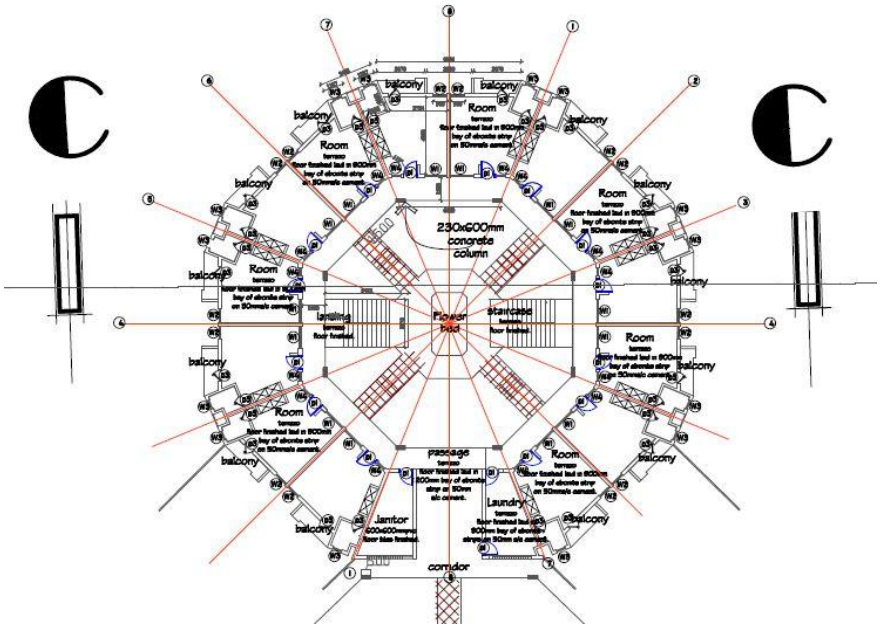


Figure AE 6: Proposed courtyard section

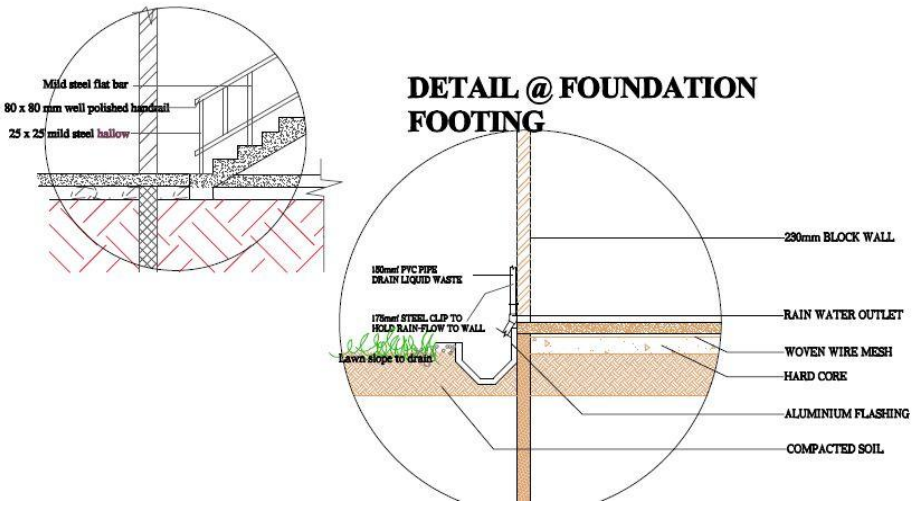


Figure AE 7: Detail at roof

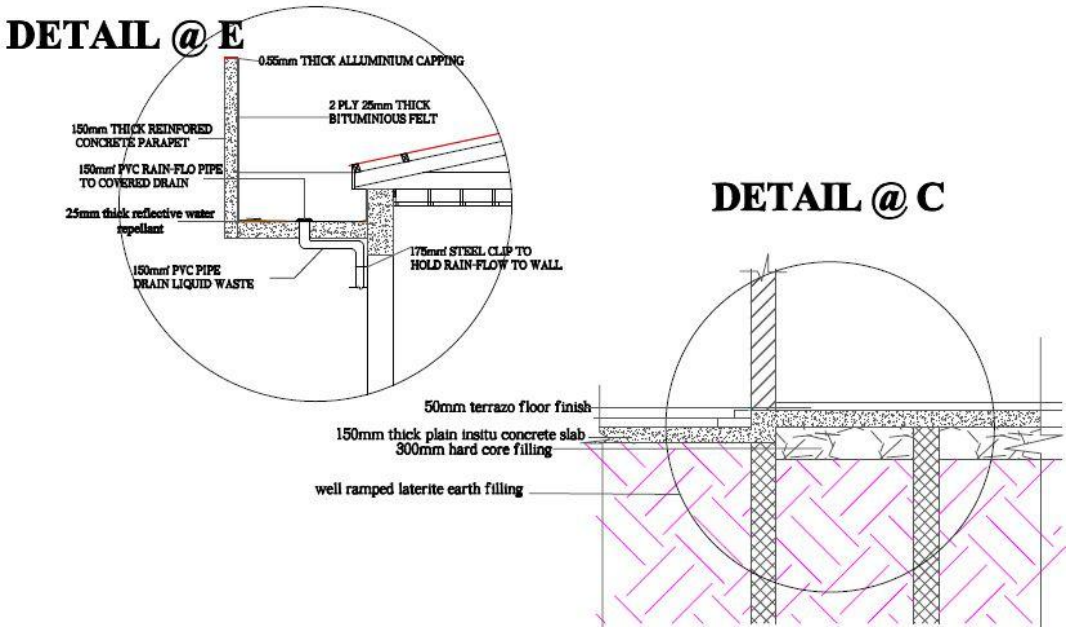


Figure AE 8: Detail at expansion joint

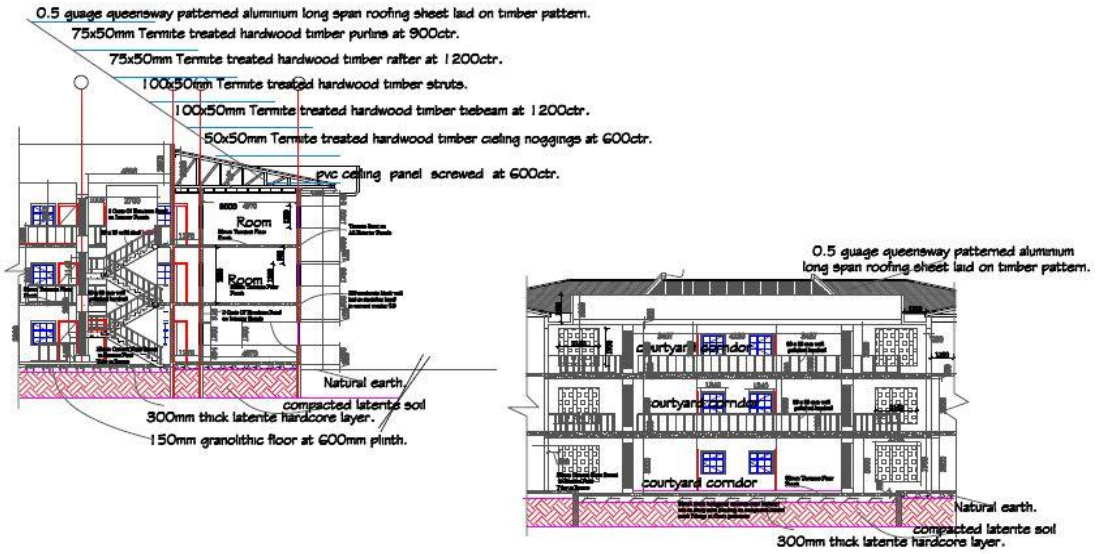


Figure AE 9: working drawing section

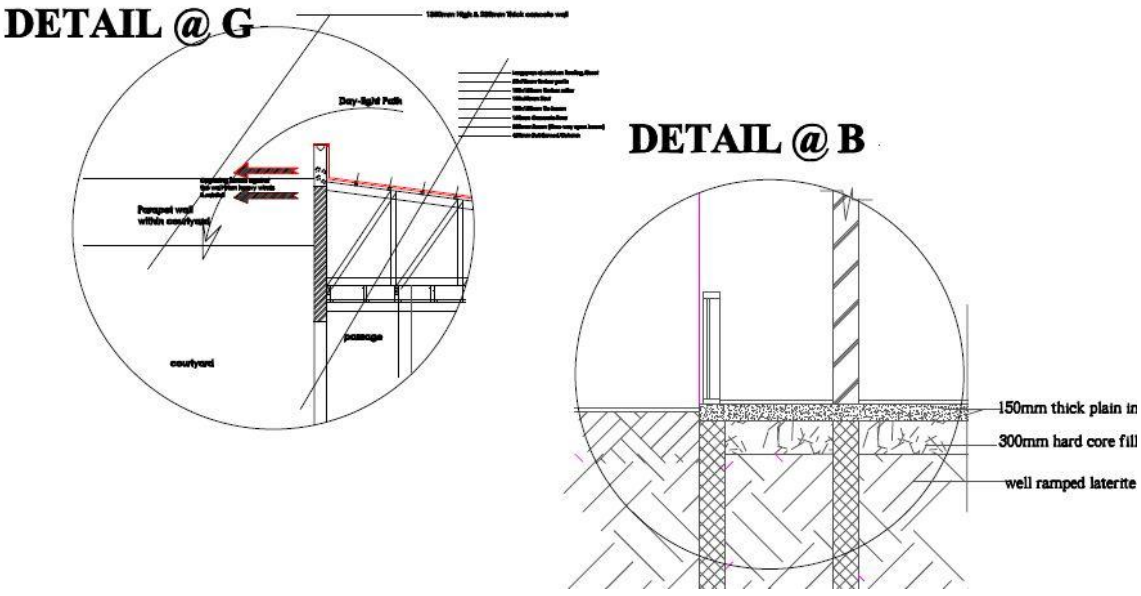


Figure AE 10: Detail at G and B