

POST-OCCUPANCY EVALUATION OF THE STAFF QUARTERS OF FEDERAL POLYTECHNIC BIDA, NIGER STATE

This research evaluated the staff quarters of the Federal Polytechnic Bida, using Post-Occupancy Evaluation (POE) as a tool. The study; identified the facilities provided in the staff quarters of Federal Polytechnics Bida, assessed the performance level of the existing staff quarters of the Federal Polytechnics Bida, evaluated the levels of users' satisfaction in terms of design and functionality and examined the correlation between the level of building performance and the users' satisfaction. Primary and secondary sources of data were gathered. Sixty-two (62) questionnaires were distributed to the residents of The Federal Polytechnic staff quarters made up of 4, 3, and 2 housing units A total of forty-seven (47) questionnaires were returned representing a response rate of 76%. The data was gathered by the use of questionnaire and observation schedule and the descriptive and Pearson r correlation in SPSS software was used to analyze the results. Result gotten from the physical observation and walkthrough survey show that due to lack of landscaping in the staff quarters there were lots of grown up weeds and unregulated agricultural activities around and too close to the apartments. This can breed reptiles in the quarters. The research also shows that through post occupancy evaluation (POE) The Federal Polytechnic staff quarters gives the occupants a high level of satisfaction and POE offers a valuable methodology for analyzing the performance of buildings in general, particularly the tertiary institutional buildings like Federal Polytechnic Bida in Niger State. The study recommends that Post Occupancy Evaluation of the facilities in Federal polytechnics Bida be conducted to determine the adequacy and state of the facilities for maintenance and improvement where necessary. The research also recommend that the Federal Polytechnic should carry out post occupancy evaluation for all the facilities in the polytechnic before carry out a development of similar design or use.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The problem housing is distinctive in nature to both developed and developing countries as well as rich and poor nations. Some particular problems are related with housing throughout the world. These problems include homelessness, shortage of housing both quantitatively and qualitatively, government are less concern of the essentials of the citizens, right to use to land that are buildable, high interest rate of home loans, as well as house cost in relation to specification and space standard. (Ibimilua and Ibitoye, 2015).

The housing stocks existing are not adequate to provide for the increasing population of our urban Centres (Jiboye 2011). In addition, Alufohai (2013), observed that the supply of residential housing that Nigeria need to close the prevailing gap is about 17 million 5 hundred thousand units in Nigeria as at that time. Meanwhile, the cost of real estate are inflated high in proportion of population progression., unacceptable infrastructures and metropolitan services, and absence of planning being implementation have been found to make housing a difficult problem. (Olotuah, 2000; Oladunjoye, 2005).

Institutional structures, facilities, and their entire environment need to be concentrated with the maximum quality so as to achieve operational and efficiency (Olatunji, 2013). Any building that is designed and construction completed should be capable to carry out its purposes in the way that those occupying it will be assured of satisfaction and make sure of effective functioning at all the periods (Nawawi and Khalil, 2008). Frequently, the feedback about the performance or workability of buildings that are completed and are useful are not

received by the Architects, except from clients that are using the building if they are satisfied or dissatisfied. Evaluation of a building by the real users is however significant for refining of the quality of the design (Ilesanmi, 2010). Institutional buildings require a based plan as evidence to repair their problems always in the procedure of reviewed standards of omission procedures and design. Institutions, more importantly higher institution, can increase the effectiveness and functionality of building in the periods yet to come when they learn from their past (Tookaloo and Smith, 2015).

In the recent literatures, the process of evaluation between that which was established and what people expected is the most widely adopted description of user satisfaction. (Parker and Mathews, 2001). Post occupancy evaluation that was studied within an institutional staff quarters will replicate the observation of staff of that quarters. In the first place, when providing any facilities (including facilities of staff resident), Satisfying users of the building should be the foremost objectives of such facilities. It is in view of this that this study sets to examine the performance of the staff quarters of The Federal Polytechnic Bida.

1.2 Statement of the Research Problem

There is a growing worry over the density of students and staff population in relation to the existing facilities and infrastructure provided for the higher institutions over decades of years ago (Akinsanya and Adewusi 2017). This is also the same in the case of Federal Polytechnic Bida.

This research is carried out to address issue of assessment of the building through Post-Occupancy Evaluation (POE) approach. POE has a mechanism that is different and can proffer solutions to the already in occupied structures; added to that is that it proposes

possible alternatives that will improve the feedback of the process of design. These methods are harmonized with the desires and needs of those inhabitants to prevent repetition subsequently when in the future structures and amenities are designed. Notwithstanding the occurrence of investigation in the environment of performance of building, post- occupancy evaluation (POE) has not establish wide practice for staff quarters in Nigeria even as a systematic technique of gathering data on buildings in-use. This research therefore, aims to evaluate the performance characteristics of staff housing in tertiary institution in Nigeria as it relates to the residents' satisfaction through post-occupancy evaluation (POE).

The researcher observed that seeing the need of completing the second part of the staff quarters according to the plan, there is need to carry out the post occupancy evaluation of the existing ones to measure the satisfaction level of the users. Also, the researcher observed that intensive effort has not been made or researches conducted to find out satisfaction of the user of the houses in relation to the limited staff quarters provided that have brought about this Post-Occupancy Evaluation of condition of the staff quarters in The Federal Polytechnic Bida.

1.3 Aim and Objectives

The aim of this research is to evaluate the staff quarters of the Federal Polytechnic Bida, using a tool called Post-Occupancy Evaluation (POE).

The objectives are to;

1. identify the facilities provided in the staff quarters of Federal Polytechnic Bida;
2. assess the performance level of the existing staff quarters of the Federal Polytechnic Bida;

3. evaluate the users' satisfaction levels of the staff quarters;
4. examine the relationship between the performance level of building and the satisfaction level of users.

1.4 Research Question

With mandate to accomplish the objective of this investigation, the following research questions will be sought to address;

1. What are the facilities provided in the staff quarters Federal Polytechnics Bida?
2. What is the performance level of the staff quarters Federal Polytechnics Bida?
3. How satisfy are the users of the staff quarter in terms of design and functionality?
4. What is the relationship that exist between the performance level of building of in the staff quarters and satisfaction level of the users?

1.5 Justification for the Study

A number of studies has concentrated on evaluation of public housing and housing facilities and such include those of Isa and Yusoff (2015); Ilesanmi (2010); Ogunbode and Adama (2016); and Jiboye (2011). These studies concluded that most built facilities are in poor state due to certain factors and that the satisfaction of the end users is essential to be considered. However, few studies such as Jovita *et al.*, (2015), Bahare, & Aida, (2015) and Akinsanya & Adewusi (2017) have critically studied issues relating to the need or importance of staff quarters. They still did not study the performance evaluation of the staff quarters. Also, few studies like Mustafa, (2017) studied performance evaluation of learning environment but not

on staff quarters, most of the studies concentrated on the management of other school facilities such as hostel, clinics lecture theatre and general facilities. Oluwunmi *et al.*, (2012) examined residential facilities in Nigerian private universities in relation to user's satisfaction which is post occupancy evaluation. Therefore, this study focused on post occupancy evaluation of tertiary institution using user's perspective to appraise the building performance. It is expected that it will contribute to the existing literature on higher institutional facilities by looking mainly at the staff housing or staff quarters with regard to the condition of the facilities, it is performance evaluation and also tackle the challenges facing the performance of staff that are dwelling in the staff quarters to the polytechnic which arises from the state of the staff quarters.

1.6 Scope of Study

The study covers all that the occupants have experienced during their stay in the staff quarters of The Federal Polytechnic Bida which was built for both the academic and non-academic staff. It covers the following area: the facilities in the apartment and the number and size of the rooms. the environmental factors that performs vital role in the satisfaction of the occupants in the quarters was also investigated, thing like; accessibility, security, drainages and vegetation. The study also looks at the socio-economic features of the Federal Polytechnic Bida, staff quarters in relation to proximity of the occupants to the following things; recreational Centre, health Centre, schools and shops within the campus.

This study covers all the staff quarters building which include; The four-bedroom flats, the three-bedroom flats, two-bedroom flats the flow plans are in the appendix (Fig. 1.1, 1.2, 1.3) and their boys-quarters all located in Federal Polytechnic Bida campus. The respondents to

the research are the occupants of the staff housing, and the staff of works and engineering services department of the polytechnic.

1.7 Significance of Study

The study looks at a tool called Post Occupancy Evaluation (POE) to ascertain and appraise the performance of a structure for architects, estate managers, facility managers, designers, and decision makers. The future facilities guidance for design can then be provide by Post-Occupancy Evaluation (POE). The staff quarters of the Federal Polytechnic Bida has been built over 38years ago, even though the second half of the plan has not been built, there has been some complains on the existing ones after it has being occupied, the quarters have experienced problems and also lacks that are connected to functionality and environmental features. This call for detailed investigation and studies to identify and analyze those problems in addition to flaws.

The paramount practical techniques to find and realize problems and faults is POE among others. It is not the same with other methods of evaluation because it gives emphasis to the desires and beliefs of the occupants of the building (Preiser and Vischer, 2005). Amidst the schedules of research related to this subject of evaluation is the post-occupancy evaluation (POE) method which have a distinctive instrument to discovery issues with the buildings that are already in use, in addition to proposing another course of action which may improve the process of feedback for design. These methods will avoid repetition in following proposals of facilities and structures in the future, this is in line with the wishes and needs of the occupants. This study will help the institution to find out if the building achieved the aims and visions of the institution.

1.8. Background to the Federal Polytechnic Bida

The Federal Polytechnic Bida, was established in the year 1977 after the decision to move the then Federal College of Technology, Kano to Bida by the Federal Government of Nigeria. In the same year the first Principal was appointed on the 5th of September 1977 that is the by name Professor J. W. Brooks, from Canada. The then Bida College of Technology embarked on the duty of employing and training pioneer staff. The first session of the academic started in April 1978 with a staff strength of eleven senior staff and thirty-three junior staff and two hundred and eleven students. Through the Promulgation of Federal Polytechnic Decree number 33 of 1979, the Bida College of Technology spontaneously became The Federal Polytechnic Bida. The permanent site of The Federal Polytechnic remains from that time along Bida-Doko Road and covers a land area of approximately 2km by 2km. The development of the Physical site started in early months of 1979 and by October that same year, some staff like the administrative staff and some departments had relocated to the permanent site. The development continued in stages and the polytechnic is accommodated securely in its permanent site today. (Federal Polytechnic Bida 2019)

Federal Polytechnic, Bida is located in the North-Central quota of country (Nigeria). There are just has two seasons the region these are the rainy season as well as dry season. From the month of May till early August of the year is mostly the rainy season comes while the month of October till April of the next year comes the dry season, Frequently, Harmattan come along between December and February and it's usually very cold especially at night so it's advisable to go with warm clothing.

The Tertiary Institution Federal Polytechnic Bida is owned by Federal Government and is located within Bida metropolis, Niger State, Nigeria. It at this time has the following

faculties: School of Business Administration, School of General Studies, School of Applied and Natural Sciences, School of Environmental Studies, School of Engineering Technology, School of Communication and Information Technology and School of Financial Studies (Federal Polytechnic Bida 2019)

1.8.1. Federal Polytechnic Bida Staff Quarters

Like many other polytechnics the Federal Polytechnic Bida has accommodation for her staff within the campus. The staff quarters were completed in the year 1983 and since then it has been in use. Although the staff number outnumbers the staff quarter, they are able to house a number of staff. They have different flat for different level of staff these include; six number four (4) bedroom flats, fifty-two number three (3) bedroom flats, and four number two (2) bedroom flats. The four bedrooms flat and the three bedrooms flat have two boys' quarters. The flow plan for each type of apartment also in the appendix as figure 1,2, and 3 and the google map of the present situation is below as Figure 1.1.



Plate.1: Google Earth 2019, Map of Staff Quarters Federal Polytechnic Bida.

CHAPTER TWO

2.0 Literature Review

In considering the words building assessment, building diagnosis, building evaluation, Post-Occupancy Evaluation (POE), and buildings in use refer to trainings and studies that centre on complete building developments (Ilesanmi, 2010). Preiser and Schramm (1998) reviewed by Federal Facilities Council (2001) make a strong attempt to incorporate user and appealing features with technical and profitable factors in to the path of buildings performance evaluation which broaden the scope. Watt (2007) make use of the word “pathology of Building” to refer to that section of building assessment that’s principally concerned with flaws and connected action to correct the flaws. Even though Duffy (2008) submits the existence of a problem of terminology, these ideas target to discover the complete structure functions; discovering probable unfits, omissions, or mistakes; and gathering data for development and nature of the future design.

On the other hand, Preiser and Vicher (2004) think of Post-Occupancy Evaluation (POE) as the most frequently used word for the activity of assessing and evaluating buildings that are in-use. POE is the processes of defining whether if the architectural are presentable in delivering the performance needed by those who use the building. the benchmark used in evaluation is the occupants. It signifies the dynamic analytic action that is required for the prescriptive instrument to enhance programming and planning. So as to improve the performance of a building, POE provides enormous potential. POE proceeded to close the space in the currentl building practise, which comprises of programming, design, planning, construction, and possession of a completed building. (Vander Voordt and VanWegen, 2005). POE is an organised method where after buildings have been designed, constructed

and occupied specific duration are being evaluated (Preiser, 2002). The gap that existed in-between the actual performance of buildings and proposed performance in a clear and detailed manner states performance criteria that comprise the evaluation (Preiser *et al.*, 1988) as also cited Federal Facilities Council (2001).

Since Post-Occupancy Evaluation (POE) lay emphasis on the requirements and the worth of building occupants, it is one of the best practical means to discovery and recognise the errors and obstacles of building. This make it different from other evaluating methods (Preiser and Vischer, 2005). It gives privileges to permit transmission of knowledge in forthcoming projects because of its ability to analyses outcomes and makes recommendations. (Lackney, 2001; Zimring, 2002; Aye *et al.*, 2004; Mastor and Ibrahim, 2010).

Generally, literature on university or polytechnic staff housing needs is lacking both in qualitative and quantitative positions. All the same, institution housing amenities operate as fundamental section of tertiary institution which is one of the things that help to make something happen in achieving its complete task (Hassanain, 2007). Furthermore, Hassanain (2008) stated that housing facilities that is well planned out assures anticipated learning environment outcomes this helps to accomplish the wider goals such as accountable citizenship and social combination.

Student housing is the centres of existing literature on housing in tertiary institutions. However, staff housing is self-same important because housing plays the major role to the total comfort and effectiveness of members of staff. Although books on housing difficulties in urban area in Nigeria include but not restricted to Mabogunje, (2003), Olayiwola, (2005), Olotuah and Babadoye, (2009.), Jiboye (2011) and Alufohai (2013), Literatures exist on post occupancy evaluation of student hostels like; Ayuba *et al.*, (2018), Oladiran (2013), and

Olagunju & Zubairu (2016). A small number of books that are available on staff accommodation deal handles tastes of staff with housing amenities. For example, Oluwunmi *et al.*, (2012) investigated satisfaction of users with residential facilities in Nigerian private universities using a case study of Covenant University. The study discovered that five out of the eight principal university facilities maintained by the Physical Planning and Development (PPD) unit, the dwellers of the tertiary institution staff quarters were satisfied majorly with the services. Oluwunmi *et al.*, (2012) in addition, confirmed that satisfactory provision of staff quarter accommodation buildings in an institution have outstanding benefit such as: going to classes punctually since they do not have to come from outside the university campus, which is prone to traffic congestion most times, encouragement perpetual lateness to work.

Also, Akinsanya & Adewusi (2017) Staff Housing Needs of Nigerian University with Obafemi Awolowo University, Ile-Ife as a Case study. The Discoveries shows that the university was complete with varied range of house types and there were 732 houses in the university staff quarters.

Although, there were no additional housing units provided over decades, there was an annual intensification in the number of applications for housing mainly due to security challenges and benefit of amenities on campus. The average annual demand for accommodation from 2011 to 2014 was 492 at 136 at the Junior Staff Quarters (JSQ) and the Senior Staff Quarters (SSQ). Nevertheless, within the same period, the typical available accommodation in both the SSQ and the JSQ were approximately 23 and 2 units respectively. The paper concludes that staff housing in Obafemi Awolowo University was quantitatively and grossly inadequate.

2.1 Public Housing Delivery in Nigeria

The effort of government involvement in the construction of housing in relation to staff quarters is briefly review here. Government reserve area GRA was reserved by the colonial masters to build for themselves housing quarters, this leads to government intervention on housing provision before the independence in Nigeria. The development and extension of the GRAs was seen by post-independence period and that brought initiation of exceptional public housing programmes absolutely for the benefit of the higher hierarchy in the new national elites of the state's apparatus Olayiwola *et al.*, (2005)

In the year 1962, the budgeting system of the country that were formerly used which is the fiscal and sectorial plans was changed with the National Development plan. From the inception the National Development Plan between (1962 - 1968), it was the plan of the government that public housing and programmes of governments should profit the low, medium and high-income people. (Olayiwola *et al.*, 2005) The first National Development Plan (1962-1968) gave low precedence to, housing with attention on housing government staff in the provincial capitals and Lagos, but the accomplishment recorded was of little proportion. (Ademiluyi, 2010).

The 2nd National Development Plan continued between 1970-74. provision of six thousand housing units was aimed at as against twenty four thousand housing units aimed in the 1st housing development plan this is for the reason that government acknowledged housing as one of its political and social tasks. It lay emphasis on delivery housing for all the social groups whether or not they are evacuated from the housing competitive market (Olayiwola *et al.*, 2005: Ademiluyi, 2010).

The national housing development, one of the second objective showed that the civil servants were one of the desired public participants to be provided for even though the group of the category of workers was not specified, it was not made not to be high-civil servants in the ministries. Even though the authentic attainment in respect to housing was rather small at the end of the period there was a marginal improvement on the 2nd National Development Plan. The strategy was only efficacious in suppling (a) Several sizes of Staff Quarters Were Ninety in Lagos area (b) Ministry of external affairs was given 4 Blocks of flats as transit houses for officials of the government (c) In 1973 Federal Housing Authority was established and charged to deliver affordable housing spread across the country and (d) The Nigerian Building Society interest decrease rate of from 8 1/2 to 6 1/2% (Olayiwola *et al.*, 2005);

The following achievements were recorded in the third National Development Plan Period: (a) The successive establishment of the rent control panel and the declaration of the Rent Control edict, charged with the fixing of least possible rent allocated on diverse kinds of housing. (b) in 1975 the anti- Inflationary task force was established, sources of inflation as it relates to the study of penalties in housing. (c) The declaration of the land use decree to permit for ease of effecting the public housing programme (d) The anti- Inflationary task force was established in 1975, to study the penalties, and sources of inflation as it relates to housing (e) To allow for ease of implementing the public housing programme. Promulgation of Land use decree.

However, during the publication of the National Development Plan in 1980, about 26, 950 units of housing, signifying 23.3% of the anticipated housing for the third National Development Plan Period was accomplished. Not sizably was achieved in the fourth National Development Plan either. The obtainable data indicates that 3,449 three bed-rooms units and

26,334 one-bedroom units had nearly been completed. The same survey shows that 443 and 3,924 units of the two categories respectively were in progress. In spite of the numerous efforts of government to deliver citizens for housing. Ademiluyi (2010) signify the gap still existing amidst Supply of housing and demand in Nigeria.

2.2 Staff Housing

In our institutions of learning student housing has been viewed as an indispensable segment, in all countries it was understood that an essential segment of institutions campuses, however, staff housing is not excluded. Several institutions of the world make available staff residential houses although it may not be sufficient to lodge all members of staff. Staff quarters in some campuses are principally reserved for fresh staff, visiting scholars and faculty and sometime for just a short-term while some others permanent accommodation is allocated for their staff without sentiment but that is determine by the vacancy. However, institution housing amenities operate as an essential part of the higher institution like polytechnics which contributes to attaining its overall work (Hassanain, 2007)

University of Nigeria Nnsuka is one of the notable home-grown universities in the country. The university has about six hundred and thirty housing units in the quarters. There are three hundred and sixty-five housing units on the Southern part and two hundred and sixty housing units sited on the Campus Northern part of the University (www.unn.edu.ng). The members of staff percentage ratio who applied but were not accommodated and those who are accommodated, was not studied.

A well organised lodging amenities stimulates anticipated educational results and will help to accomplish the wider goals like social unity and answerable residency (Hassanain 2008). Oluwunmi *et al.*, (2012) has discovered that the dwellers of covenant university staff quarters were satisfied majorly with the facilities of university facilities that are principally sustained by the department of Physical Planning and Development (PPD). The research also indicated that Covenant University in January, 2010 in an attempt to provide for more of its staff lodging established the new housing estate which consists of:

- i. Twenty-Six Number Detach Houses: The specification of households in the Professor's Village (26 in number) houses were built with the exactly. The duplex contained the following specifications: Master bedroom, dining area, Family lounge, main lounge, guest conveniences kitchen, guest's room and two other bedrooms (all rooms in-suite). steward' quarters containing 2 bedrooms, a kitchen and convenience, each of the 4 bedroom separated houses having.
- ii. Blocks of Two Bedroom Flats: These thirty-two flats consist of eight flats in each of the four blocks. The components of each flat include: Sitting room, kitchen, dining area and visitor's toilet inclusive of an in-suite two bedroom.
- iii. Blocks of Three Bedroom Flats: These consist of forty- eight flats in twelve blocks, each of the blocks containing four flats with the following specification: a living room, three different bedrooms, (in-suite master bedroom), visitor's toilet, dining unit store and kitchen.

It therefore implies that 106 units of housing were included to the current houses in the quarters of staff Covenant university. The federal and state government universities and

polytechnics are uninterested in providing staff accommodation while self- owned institutions are striving to build more staff housing in our dear country Nigeria. Oluwunmi *et al.*, (2012) noted that People from several regions of the country would be enticed because of provision of infrastructure for example security, functional public utility, internet connectivity, e.g. constant power supply and portable water. Peace and quietness is achievable from a campus environment where satisfactory housing is actuality delivered. However, the Chairman, Niger Delta University branch, Academic Staff Union of Universities, Dr. Tuboukiye Sese, wept for the lack of staff quarters which make academic and non-academic workers to operate from Yenagoa, a trip of close to one hour to the school is the state capital, (Deji-Folutile and Oketola, 2014)

2.3. Information-Gathering Techniques for Post-Occupancy Evaluation

The most important aspect of post-occupancy evaluation (POE) is gathering of Information or data so as to measure a range of issues and carry out an evaluation. In the POE of US Postal Service, few information-gathering techniques was brought up by Kantrowitz and Farbstein (1996) which most of them are comparably procedures used in other studies:

1. Pre-site visits forms: Facilities managers and personnel writes out a comprehensive explanation forms before visitation to the site visit, which will provide building history, formation of building, postal procedures, and supervisor valuations of the facilities.
2. The consultations of users: Client or occupant's discussion enquiries are designed to pay attention on problems connected to design, patterns of service, and quality of use.

3. Clerks Interviews: this is centred on by what method the exceptional actions and design of architecture reinforced customer service and trade processes.
4. Touring conversation: The procedure involves taking a gradual sightsee over the facilities with a diversity of persons who had been included in its design, organisation, functioning and sustenance. At selected places alongside the road, the characteristics of the area is being enquired of the participants by the facilitator, their opinions about how well it works, its internal and external appearance, along with other features.
5. Observations of the space-use: at every specific location, the patterns of use are systematically observed.
6. Checklist of physical environment: Physical characteristics are recorded in checklist usually: such factors as door type and operation; floor and wall materials; dimensions of key fittings; lighting; and. types, sizes, and placement of signs.
7. Details of Systems and Assessment: Sensitive issues are examined issues like; collection of materials, fixtures, and finishes; construction detailing and installation; and the performance of HVAC, electrical systems, lighting, and safety.
8. Photographic documents—Photographs are usually taken to put to record use patterns such as interactions, queuing, and merchandise selection as well as design features such as details, lighting, materials performance which include wear and tear, and so on. (Elçin, 2002)

2.4 Purpose of Post Occupancy Evaluation

In spite of a progressively encouraging environment for POE to function, there is still lack of enthusiasm to venture in any kind of methodical evaluation procedure from those inside the building erection or construction industry. It is mandatory on those that are not inside the manufacturing industry to plainly specify reasons, and hence the value, of conducting POE as a matter of facts. As deliberated previously, there are a number of other interpretations of POE and, as a result, there are multifarious accounts confirming to the reason behind conducting a POE. However, Zimmerman and Martin (2001) opened that, despite a propagation of purposes and reasons “the overarching benefit from guiding POE is the delivery of important data to sustain the goal of uninterrupted development”.

Whyte and Gann (2001) suggested amount of reasonable profits for guiding a POE in similar and general terms, these include: improving authorizing process, applying design skills more effectively; improving user needs; providing information for design managers and monitoring processes and procedures, refining organization measures; and aiming of revamped. Therefore, it may be recommended that POE, offers a method of collecting and circulating data that is needed to all investors inside a structure life cycle, with notable and precise components of this information that of benefit to specific stakeholders, in diverse ways; for example, Preiser recommends that POE has precise importance for the managing of facilities (Preiser, 2002). It is essential to upheld the target of POE and the outcome benefit may be added, many sources propose that an essential modification in the way building procurement and usage is looked at, particularly within the customers/contractor and project communities (Zimmerman and Martin, 2001, Leaman and Bordass, 2005, Roberts, 2001).

2.5 The Barriers to Widespread Adoption of Post-Occupancy Evaluation (POE)

The purpose and motives that made POE's not carried out with any regularity are well acknowledged by a number of literary sources. Post-occupancy evaluation a growing obstruction with the lack of advancement toward POE becoming a mainstream activity in the process of building procurement. Vischer (2001) takes a broad-brush approach, identifying the "obstacles to widespread support of POE as cost, defending professional integrity, skills, and time". Zimmerman and Martin (2001) barriers to the widespread adoption of POE was similarly suggested and number of significant, includes: "fragmented motivations and welfares within the procurement and procedure processes, potential liability for owners, lack of agreed and reliable indicators, exclusion from current delivery expectations [and] exclusion from professional curricula."

Although Zimmerman and Martin scrutinize each of these barriers in detail, it is interesting to scrutinize in more detail the idea of exclusion from professional curricula. They propose that “Standard practice does not recognize the concept of continual improvement or, indeed, any ongoing involvement on the part of the designers in the facility delivery process” Zimmerman and Martin (2001). In spite of the citing of North American examples, Zimmerman and Martin’s views are equally valid to the United Kingdom, where the idea of continual development via a feedback process is not emphasized. Designers “are almost never paid to go back and review the outcomes of their design decisions that is situation they are facing” (Zimmerman and Martin, 2001). If opportunity is given, many designers would be ready to reconsider their designs in order to advance their skills and produce more effectual buildings. Finally, an absence of POE on the educational curriculum as an obstacle to POE adoption was identify. In the UK, Cooper (2001) POE in UK architectural education was discovered gradual phasing out of which “by the early 1990’s. had all will be removed out from the curriculum”. Cooper (2001) also detects an more barrier to POE as being the simple fact that, despite the endeavored introduction of feedback as “Part M” in the RIBA’s Plan of Work, POE is not regarded as part of an architect’s “normal services” to their client. Thus, “client organizations are unlikely to pay for POE except the profits of such assessments are both plain and essential in value”.

Bordass *et al.* (2001) equally accept this idea of cost and who pays for POE; not only to carry out cost of implementing the findings from the evaluation but to carry out a POE survey. Additionally, the designer and the client both have the potential to benefit from their perspective, harmed by POE. Thus, there appears to be unwillingness, on both sides, to fund the feedback process with no clear single beneficiary,

The last obstacle to POE implementation deliberated here is also possibly the most significant perspective of architecture. In an increasingly litigious society, the notion of serious feedback, especially if it includes negative criticism, is almost certain to be regarded with skepticism by the design community. The notion of professional liability is well documented as being the most significant contribution to the lack of POE work, on the part of the designer. Cohen *et al.* (2001) recognize that the feedback process “was omitted from the Standard Form of Agreement (SFA) for the appointment of an Architect. . . apparently due to its potential impact on Professional Indemnity Insurance (PII)”. Thus architects are not merely disturbed with the potential harmful effects on their status (Bordass *et al.*, 2001) connected with any bad outcome from feedback, but the potential exposure to damaging litigation as a result of defective design. As part of the standard services during the procurement process, in this situation it is clear that “professionals are unlikely to offer POE, unless the issues of liability can be satisfactorily determined” (Cooper, 2001).

2.6 Residential Satisfaction

Satisfaction in residential housing is a reflection of “the stage to which the occupants observed that their housing is aiding them to achieve in their set goals”. It determines by individuals’ evaluation of the situations of their present residential environment, subject to their needs, anticipation and accomplishments (Hui and Yu, 2009, Jiboye, 2011). According to Salleh (2008), Satisfaction on residential housing indicates the absence of complaints as their needs meet their aspirations. The theories on residential satisfaction are based on the notion that residential satisfaction is a measure of the difference between occupiers’ actual and desired housing and neighbourhood situations whose judgments are centred on their

needs and aspirations. Inversely, they are likely not to feel contented if their housing and neighbourhoods do not meet their residential necessities and ambitions.

2.6.1 Residential Satisfaction Theories

An important indicator and planners, architects, developers and policy makers use it in a number of ways to defined residential satisfaction as the feeling of contentment when one has achieved what one needs or desires in a house, is Indeed, theories of residential satisfaction all hinge upon the notion that residential satisfaction measures the differences amongst household actual and preferred (or aspired to) housing and neighborhood conditions (Galster and Hesser, 1981 as cited by (Mohit and Raja, 2014). A priciple of residential satisfaction is established and used in the design of a path model in which the compositional features of households and the context of the dwelling and neighborhood in which they live affect numerous dimensions of satisfaction.

Mohit and Raja, (2014), Suggests three different theories upon which most of the empirical studies are based. These are; psychological construct theory. housing needs theory and housing deficit theory.

The core features of the three theories are summarized in Table 2.1.

Table 2.1: Summary of Major Elements of Residential Satisfaction Theories

Year& Author(s)	Title of theory	Main elements
Rossi (1955)	Theory of Housing needs	<ul style="list-style-type: none"> a) Changing housing needs and life cycle stages. b) Difference between existing and preferred housing needs generates dissatisfaction or housing stress. c) Occupants migrates because of strees.
Winter & Morris (1978)	Theory of Housing Deficit	<ul style="list-style-type: none"> a) Housing conditions are judged according to some individual's norms. b) Inconsistency between real and family housing standards results in deficit of housing. c) Deficit of Housing is mitigated through some form of housing modifications
Galster (1985)	Theory of Psychological construct	<ul style="list-style-type: none"> a) locational condition of individual's residential situation is construct mentally. b) when housing is proximately corresponding with the current reference situation satisfaction prevails. c) Inadequacy will lead to either amendment or displeasure/adjustment.

Source: Literature review by Mohit and Raja, 2014.

Mohit and Raja, (2014), stated that the three theories discussed above have mostly used either one or a combination of empirical studies on residential satisfaction/ dissatisfaction.

2.7 Post-Occupancy Evaluation Categories Based Elements of Building Performance

The POE concentration can be considered in terms of three broad categories of performance elements. These categories are; 1) functional performance elements, and 2) the technical performance elements, 3) behavioural performance elements (Blyth et al., 2006). These elements comprise of performance indicators that symbolize signs, attributes, markers, and items that evaluate specific qualities of an element to be measured. Indicators of performance change based on the evaluation purpose and case study at hand (Kim *et al.*, 2005; Sanni-Anibire *et al.*, 2016).

2.7.1 Elements of Functional Performance.

Functional performance here, discussed the functionality and efficiency level of the features in an institutional buildings and facilities. Functional Performance elements include; spatial, accessibility adequacy of necessary facilities and capacity for activities. Other elements include; utilities, telecommunications, ability to respond to change after a while and efficiency of communication and circulation. These elements are connected directly to the activities within the building. They are needed to be in conformity to the precise necessities of the residents (Preiser *et al.*, 1988 reviewed by Mustafa, 2017). This direct fitting together between a building's functional parts and the essentials of its users is perhaps there as on for its acceptance of noteworthy attention in POE studies (Sanni-Anibire *et al.*, 2016).

2.7.2 Elements of Technical Performance

Elements of technical performance deal with endurance features such as, fire safety, structure, sanitation and security (security: the degree of resistance to, or fortification from, fire safety, harm: fire resistance of the major structural elements of a building, fire extinguishment and containment, smoke generation, flame spread, the toxicity of burning materials, and the ease of egress in case of a fire), health, ventilation and (Preier *et al.*, 1988 reviewed by Mustafa, 2017). Technical performance handles and addresses the issues of indoor environmental quality (IEQ), from an environmental perspective, which have impact the health, comfort, and productivity of occupants (Choi *et al.*, 2012). IEQ elements include thermal comfort (HVAC system and natural ventilation system), indoor air quality, visual comfort (the quantity and quality of lighting, control of shadows, glare, luminance, and adequate luminance) and acoustical comfort (acoustic comfort relates primarily to providing conditions in a building that facilitate clear communication of speech between its occupants). Sound/noise control can be distributed through walls, windows, floors, and doors that provide satisfactory decrease of sound from adjacent activities (Hassanain, 2008; Sanni-Anibire and Hassanain, 2016).

2.7.3 Elements of Behavioural Performance

Elements of behavioural performance form a link between occupants' activities and the physical environment. Occupants' comfort is also affected by the configuration of circulation routes on social interaction, and the features that affect the building's image and outlook. Typical behavioural performance issues take account the effect of area size and number of persons that occupies building, and the effect of functional space between distance upon the frequency of use. (SanniAnibire *et al.*, 2016).

2.8. Benchmark Users Satisfaction in Building Performance Evaluation

The whole evaluation process is crucial factor of the user and occupant. Building performance also focus on users' perspectives on buildings is not restricted to energy conservation, life cycle costing, and the functionality of buildings. (Mamalougka, 2013). It is important to examined the relationship between building and user. The most significant factor, as a standard of a building's success in meeting the design objectives, is the level of user satisfaction. Problems and their sources must be identified and factors that influence the level of satisfaction should be discovered. (Wilkinson *et al.*, 2011). In general, satisfaction is an independent evaluation of the performance of products or services in meeting the needs and expectations of users or customers (Parker and Mathews, 2001; Ueltschy *et al.*, 2007; Hanif *et al.*, 2010). Satisfaction studies cut across a wide range of professions in the management and social sciences as well as the built environment (Ibem *et al.*, 2013).

It associates the benefits or values that users or customers derive to that anticipated when a product or service is expended. If the performance of a product or service meets users' needs and expectations, the user or customer is said to be satisfied with the product or service, and vice versa In sum, satisfaction is a measure of the difference between the actual and expected performance of products or services in meeting users' needs and anticipations from the users' or consumers' viewpoints during or after a consumption experience. In fact, based on the expectancy-disconfirmation theory, from which most studies on satisfaction draw, (Oliver, 1981; Parker and Mathews, 2001).

Constructions of buildings, are designed and constructed following several expectations by, professionals, clients, users, and the community. To clients, buildings require vast capital investment and are expected to bring returns on investment, where as to professionals (e.g.,

engineers, builders, and architects) buildings are products of their imaginative thinking and inventiveness. The buildings will meet their needs and aspirations by supporting their daily activities On the part of users and the community, and crucial expectation. (Davara *et al.*, 2006) and ultimately improve the aesthetic quality of the built environment.

PBE provide feed backs on causes and effects of environmental issues that are related to the buildings, there by informing planning and management throughout the building's life cycle (Meir *et al.*, 2009) and culminating in the production of sustainable built environment (Zimring, 2002). BPE contributes to improving the quality of buildings and building projects delivery process (Preiser, 1995 reviewed by Mustafa, 2017; Kim *et al.*,2005). To this end, Vander Voordt and Maarleveld (2006) observed that building performance evaluation (BPE) assesses the architectural, technical, functional, and economic value of buildings (product evaluation) or building procurement process (process evaluation). By recognising the major shortcomings and strengths of buildings from the end user's perspective (Khalil and Nawani,2008),

In the literature in last few decades, much progress has been made in developing different BPE tools and approaches. The main categories of approaches to BPE, include those approaches that focus on the (i) quality assessment of buildings (ii) functional fittingness of buildings that is space utilization, physical condition, safety and statutory requirements;; (iii) service ability of buildings with regard to occupants' needs and 'facilities provided; (iv) environmental performance in terms of indoor environmental quality, intrusion, appearance, control and lighting; (v) user satisfaction with the design and construction of and services in building; (vi) energy consumption and indoor air quality; (vii) post occupancy evaluation (POE) of technical, efficient and behavioural aspect of buildings.

A comprehensive series of implements have also been established for each of these approaches. Hasselaar (2003) stated that an indicator is a sign that points to a condition to be measured, to evaluate precise qualities and performances. In the last few decades, much research work has also been used for the development of building performance indicators (BPIs). (O’Sullivan *et al.*, 2004; Kim *et al.*, 2005; Khair *et al.*, 2012). In the context of building, Preiser (1999 reviewed by Mustafa, 2017) held the view that BPIs should be derived from values held by individuals, groups, organizations, or the entire society who are stake holders in the building industry, thereby indicating that the criteria for measuring the performance of buildings should be derived from how people see their buildings and the importance that they accord to them. Similarly, Fatoye and Odusami (2009) proposed that building may be perceived by the same people differently at different times, or differently by different people at same time and that the expectations of building users and the community are diverse and vary between individuals and groups at the beginning of building occupation, users hold various expectations on the ‘performance of their building, in terms of the benefits that it will provide and the needs it should meet. (Ihem *et al.*, 2013).

2.9.0 Post Occupancy Evaluation (Poe) Performance Indicators

29.1. Quality Design (QD)

The quality of all architectural attributes of the building such as the design and configuration of space, landscape architecture, general aesthetic appearance and building location in relation to other facilities in the campus. (Sanni-Ariibire and Hassanain, 2016).

2.9.2. Building Layout (BL)

The plan and layout of building, furniture, space and storage and the convenient circulation and accessibility to various usable spaces within a building are of highest importance to residential satisfaction. Spatial attributes, the sequence, relationships, location, size, shape and detail of spaces have been shown to affect dweller behaviour (Preiser *et al.*, 1988 reviewed by Mustafa, 2017). The internal design of the building should be effective in terms of the planning of rooms in each level in the building, 'the location and number of the width of the corridors for movement, and stairs (Hassanain, 2008; Sanni- Anibire and Hassanain, 2016).

2.9.3 Exterior and Interior Appearance

One of the most important aspects of building performance is appearance. The quality of construction and selection of building materials should be compatible with, and supplement, the existing physical environment. Common problems that disturb exterior walls are colour fading, moisture and wind infiltration, buckling, spalling, cracking, delamination, clean ability, and erosion. (Hassanain, 2008; Sanni-Anibire and Hassanain, 2016).

2.9.4 Access to facilities on campus

These facilities on campus includes medical centres, parking lots, sports facilities, worship centres, campus shuttle stations, libraries, and academic buildings. The building's closeness to the facilities on the campus, usually within a walk able distance to teaching, recreational, food-consuming, and car parking facilities. (Hassanain, 2008). The major factors in the satisfaction of its occupants is location of a building and its closeness to places of interest. (Sanni'Anibire and Hassanain, 2016, Hassanain, 2008; Fatoye and Odusami, 2009;).

2.9.5 Indoor environmental quality (IEQ)

IEQ of a building is a principal concern at present because it influences productivity level of its occupants, the health and wellbeing. (Fisk, 2001). IEQ consists of indoor air and quality thermal comfort, (IAQ), acoustic comfort, and visual comfort (Sanni-Anibire and Hassanain, 2016).

2.9.6. Thermal Comfort.

Thermal comfort is defined by ASHRAE 55(2004) as “the state of mind that expresses satisfaction with the surrounding thermal environment.” The main influencers of thermal comfort in an indoor space are the HVAC system and natural ventilation system through windows and other openings. Therefore, comfort will be determined by the ability to control both systems (Sanni-Anibire *et al.*, 2016; Sanni-Anibire and Hassanain, 2016).

2.9.7 Indoor Air Quality (IAQ)

Anderson *et al.*, (2014) define IAQ as “the comfortable range of the temperature, humidity, ventilation and chemical or biological contaminants of the air inside a building.” IAQ is the quality of air within a facility or the built environment. The major concern is indoor air pollution, which can cause asthma, irritation and allergies. Two of the most dreaded implications of poor IAQ are sick building syndrome (SBS) and building- related illnesses. (BRI) (Sanni- Anibire *et al.*, 2016; Sanni-Anibire and Hassanain, 2016).

2.9.8. Acoustic comfort

(Preser *et al.*, 1988 reviewed by Mustafa, 2017). Outdoor and Indoor factors influence acoustical comfort. “Acoustic criteria cover the ambient level of sound, the transmission of

sound between areas and rooms, echo in specific areas such as machine noise and auditorium acoustics.” Although indoor factors can be controlled, outdoor factors may be the primary causes of discomfort, and its control depends on the filtering level of the building envelope (SanniAnibire *et al.*, 2016; Sanni-Anibire and Hassanain, 2016).

2.9.9. Visual comfort

Visual Comfort was defined by the Illuminating Engineering Society of North America (IESNA, 2009) as “an essential human need that can affect task performance, health, safety mood and atmosphere.” The design of facilities and buildings creates stability between artificial and day- lighting, whereby sufficient natural light is allowed through transparent parts of the building envelope (Hassanain, 2008; Sanni-Anibire and Hassanain,2016).

2.9.10 Fire safety and Security

One of the earliest elements to be appraised systematically is fire safety, likely because of enormous concerns for life and property. Related criteria include the fire resistance of the major structural elements of a building, fire extinguishment and, flame spread, containment, smoke generation, the toxicity of burning materials, and the ease of way out in case of a fire (Preiser *et al.*,1988 reviewed by Mustafa, 2017). Fire safety and security are commonly treated together as one technical performance element because of their role in the protection of life and the property from devastating events (Sanni-Anibire *et al.*, 2016). Security is defined as “the degree of resistance to, or protection from, harm. It applies to any vulnerable and valuable asset, such as a person, community, nation, dwelling, or organization” (Garcia, 2007).

2.9.11 (QBSS) Quality of building support services

An integral part of the built environment is building services and infrastructures, they have major impact on educational satisfaction and quality of life of occupants. Which includes water supply washrooms and water closets, laundry, electrical services and information technology (Ibem, 2011; Hassanain, 2008). Services, such as electricity supply and warm water, must be satisfactory for the level of use. All these facilities should be accurately designed, installed, maintained, and managed. The suitability and availability of these amenities together with the issues of the cleanliness of washroom facilities are of greatest concern (Hassanain, 2008; Sanni-Anibire and Hassanain, 2016).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Population of the Study

The population of study in this research work is the total numbers constituting the target group defined the objective and the scope of the study. In the case study a total of sixty-two (62) Staff quarters of The Federal Polytechnic Bida and one of the occupants were considered for investigation in each of the apartment, along with the department in charge of the design and maintenance of the staff housing.

3.2 Sampling Elements

The sampling elements use in this research is one resident in each of the sixty-two (62) residential houses built as staff housing in The Federal polytechnic Bida campus.

3.3 Sampling Teci1nique

For the purpose of this study, seeing that the sampling frame is small and need the opinion of the total occupants of the quarters, the researcher adopted total population sampling (enumeration) method. The total enumeration sampling method was used for the physical observation of the sixty-two (62) staff quarters and to administer questionnaires to the staff that are the occupants of staff housing. Then, the purposive sampling was adopted in the schedule of interview with the physical Planning Development Department and the Work and Maintenance Department that are concerned with the design and maintenance of the Staff quarters.

3.4 Method of Data Collection

1 Physical Observation

The researcher carried out the assessment of the state of the condition of the houses in the quarter by inspecting the component and facilities of the quarters through walk-through survey taking measurement of the existing structure that is of the different types of buildings in the quarters and observation. This revealed the building condition and the physical appearance of the houses.

2. Questionnaires

The questionnaires were design and administer to the head of household of the 62 staff quarters. The question in the questionnaires will comprises the close ended question and opinion ratings in form of five (5) points Likert scale as follows: VP (Very Poor), P (Poor), M (Moderate), G (Good) and VG (Very Good). The structured close ended questions had various options which are likely to be answer of the respondents by ticking the appropriate answer.

3. Interview

The interviews that were carried out were purely oral interview. These interviews enable the researcher to obtain useful information which could not be obtained from observation and questionnaires administration. The interview was schedule and conducted by the researcher to three (3) staff from Directorate of Works and Maintenance Department and two (2) staff from physical Planning Development Department.

3.5 Sources of Data

The sources of data that was employed for this research are mainly two, they are; the primary sources and the secondary sources;

1. Primary data sources

This data sources provide the facts to the researcher by going to the field directly to collect it. In this research the researcher went to the target population of the study which is the staff quarters of Federal Polytechnic Bida. The data was collected through field survey, interviews as well as questionnaires.

2. Secondary data Sources

The secondary data for this research was collected from the Physical Planning and Development Directorate (PPDD), The Maintenance and Works Department (MWD), the committee in charge of all accommodation and the administrative office.

TABLE 3.1. Questionnaire Administered Within Federal Polytechnic Staff Quarters to the Occupants

Questionnaire	Number Distributed	Percentage %
Returned	47	76
Not returned	15	24
Total	62	100

Source: Field Survey (2019)

3.6 Data Analysis Techniques

Through indicators or metrics called attributes, the satisfaction level of buildings can be measured (Gopikrishnan and Topkar, 2014). The technical, functional, and behavioural aspect of the building was covered in this study through the indicators. The process of analysis was separated into four parts in line with the objectives.

3.6.1 Data Analysis Technique for Objective one; The Facilities Provided in The Staff Quarters of Federal Polytechnic Bida; The researcher use questionnaire to get the data which is the provided facilities and make use descriptive data analysis technique (table) to analyse the data.

3.6.2 Data Analysis Technique for Objective Two; The Performance Level of the Staff Quarters

The second part is to determine the building performance score in terms of whether they were evidenced and examine the comparative analysis of the building performance review whether the facilities are in very good state (5), good state (4), medium state (3), poor state (2), and very poor state (1). The detailed building performance survey (BPS) from the previous schemes and studies was adapted. (Nawawi and khalil, 2008; Sanni-Anibire and Hassanain, 2016; and Ilesànmi, 2010;). The researcher conducted this section through the researcher's rating survey were evaluators that have professional knowledge in the field of architectural design property management and construction industry can carry it out.

3.6.3 Data Analysis Technique for Objective Three; Level of Users' Satisfaction in Times of Design and Functionality.

The third part covered results of the satisfaction level of the surveyed building. This involved the analysis of the survey findings by the users of the quarters with 40 items in terms of QD and performance, IEQ, and QBSS. These is from data extracted from the questionnaires fill by the occupants and presented in table form. The summary was presented with pie chart.

3.6.4 Data Analysis Technique for Objective four; The Relationship In-between the Satisfaction Level and the Performance Level.

The last objective was analyse using inferential technique where the mean item scores (MIS), which talk about the main percentages of researchers' rating and users' satisfaction in both surveys, was accepted for quantification and evaluation. This demonstrated the correlation analysis between the building performance scores and the users' satisfaction scores based on similar performance attributes for the selected building using Pearson Correlation with significant at the 0.01 level. The findings were derived from the questionnaires that was disseminated to the building users. The replies gotten from the questionnaires was used to make available precise finding and the study' recommendations.

CHAPTER FOUR

4.0 Data Presentation and Analysis

This Chapter is focuses on the presentation of data obtained during the fieldwork. The analyses and discussion were done in accordance with the objectives of the study. The data collected were analysed through scientific tools like percentage, mean, and Peason's correlation coefficients with the use of micro-soft excel and SPSS. Some results were represented by the use of tables, pie-chart and bar-chart. Also, some result gotten from walkthrough were represented with the use of pictures.

4.1. Demography of the Users of the Federal Polytechnic Staff Quarters

This study highlights the availability, convenience, comfortability and functionality of the use of structure, spaces and facilities supply for staff of Federal Polytechnic Bida in the quarters. The performance and level of satisfaction of the users of the facilities are determined by conducting the post occupancy evaluation. The response of users of the facilities and services in the staff quarters of the polytechnic occupying different apartment alongside their boys' quarters were presented and analysed below.

Table 4.1. Respondents' Demographic Characteristics

DEMOGRAPHIC VARIABLES	SUBCATEGORIES	FREQUENCY	PERCENTAGE (%)
Age of The Respondents	20 – 35	5	11
	36-40	9	19
	41- 55	18	38
	56-70	15	32
Category of The Employment	Senior Academic	33	70
	Junior Academic	0	0
	Senior Non-Academic	12	26
	Junior Non-Academic	2	4
Length of Time in the Quarters	0-5	13	27.7
	6-10	13	27.7
	11-15	6	12.8
	16 And Above	15	31.9
Type of Apartment Occupied	Single Detached	6	13
	Semi- Detached	38	81
	High-Rise Building	3	6
	Others	0	0

Source: Field Survey, 2019

Table 4.1. shows the demographic background of the Federal Polytechnic staff quarters users that were studied. It displays the age of occupation with the highest number falling between 41 to 55 years of age. It shows category of the employment of the Respondents and that most of the occupants are senior academic staff. The table displays the length of time (period) the occupants have stayed in the quarters and also shows the type of apartment occupied by each respondent there are 6 respondents making up to 13% occupying Single detached 38 respondents making up to 81% in Semi- detached apartments, 3 respondents as 6% in High-rise building.

4.2. The Facilities Provided in the Staff Quarters of Federal Polytechnics Bida

The facilities provided in the staff quarters by the federal government and the institution. The researcher makes use of the questionnaire to ask the occupants the facilities that were

provided and some were seen during the recognizant survey. The responses are analysed below;

TABLE 4.2. Available Facilities in the Federal Polytechnic Bida Staff Quarters.

S/NO	FACILITIES	AVAILABLE	NOT AVAILABLE
1	Electricity Supply	47	0
2	Water supply	47	0
3	waste Dumping tank/drum	20	27
4	Drainage	0	47
5	Treatment Plant for water	0	47
6	Living Room	47	0
7	Dining Area	44	3
8	Conveniences	47	0
9	Kitchen	47	0
10	Store	44	3
11	Visitors Room	6	41
12	Family Lounge	0	47
13	Guest Toilet	6	41
14	Study room/library	0	47
15	Hot/Cold water supply	0	47
16	Internet Connection	0	47
17	Street Light	0	47
18	Parking Lot	29	18
19	Ceiling Fan	47	0
20	Air Conditioners	0	47
21	Garage	44	3
22	Store cupboard	0	47
23	Shop	0	47
24	External kitchen	0	47

Source: Field Survey, 2019

Table 4.2. shows that there were some facilities that are available to all in the Federal Polytechnic Bida Staff Quarters those facilities are; water supply, electricity supply, living room, kitchen, toilets (see figure 2, 3, and,4), and ceiling fans. The table also shows that there are some facilities that are not available at all these include; water treatment plant, drainage, family lounge, study room or library, hot/cold water source, internet connectivity, street light, air conditioner, store cupboards, shops and external kitchen. Finding also shows the facilities that available to some quarter and not to some others such as; waste disposal, dining area, store, guest toilet parking lots and garage. (see plate 3 and 4) The reason for the latter is the

three of the quarters are two-bedroom flats and some quarter lack the facilities because of their location.

4.3. The Performance Level of the Staff Quarters of the Federal Polytechnics Bida

Based on the researcher’s rating of the Federal Polytechnic staff quarters, the building performance assessment was quantified with the result centred on the quality of a number of building attributes as stated before. The summary of the results of the building performance was presented in the Table 4.3 below. The score based on the 40 indicators and factors of quality of design QD, internal and external quality IEQ, and quality of building supporting services QBSS. The rating of each 40 items and attributes related to building performance were listed on the survey form attribute in the relative performance elements refers to the scale value of the BPI. The result of the building performance level for the Federal Polytechnic staff quarters structures were demonstrated. During the building performance inspection survey, the researcher’s ranking evaluated the scale of the building performance, following are the result based on the ratings of researcher for several items:

TABLE 4.3. Showing the Evaluation of Building Performance by the Researcher

POE PERFORMANCE LAYOUT AND CRITERIA			BUILDING PERFORMANCE LEVEL					
			VP	P	M	G	VG	MEAN
QD	Layout of Building	• Adequate horizontal movement routes within the building	0	3	9	29	6	3.8
		• Adequate vertical circulation routes within the building	0	5	5	35	2	3.7
		• Spatial configuration size / zoning / grouping of special rooms	0	7	1	20	10	3.7
		• Proportions and dimensions and ceiling height of the rooms	0	6	7	32	2	3.6
		• Adequate of opening design (doors and windows)	0	2	6	36	3	3.9
		• Overall quality of building layout	0	4	9	31	3	3.7

Interior appearance	• Quality and presentation of interior finishes	5	1	2	8	2	2.8
	• Quality, size, colour and distribution of furniture in the rooms and all spaces.	8	1	1	6	7	2.9
	• Overall quality of the interior appearance of the building	7	1	1	7	6	2.9
Exterior appearance	• Quality and appearance of the finishes of exterior	5	1	1	7	5	2.8
	• Quality and presentation of landscaping and pavement surround the building.	10	1	1	7	3	2.6
	• If adequate sidewalks between buildings Available.	20	1	8	7	0	2.0
	• Quality of design of open space (green parks and walk ways)	18	1	1	2	0	1.9
	• Overall quality appearance and presentation of building exterior finishes.	19	1	1	3	0	1.9
	• Proximity to sport facilities	13	1	1	10	0	2.4
Accessibility	• Proximity to children school	5	1	1	15	5	3.1
	• Proximity to shuttle bus stop (public transportation)	2	8	1	15	5	3.3
	• Proximity to car park facilities	3	0	0	37	7	4.0
	• Proximity to places of worship	0	0	2	15	8	3.7
	• Overall adequacy and quality of accessibility.	4	1	1	16	2	3.0
	• Quality of natural and artificial thermal comfort of the building.	0	0	1	22	13	4.0
IEQ Thermal comfort	• The quality of air in the rooms (dryness and smelliness)	2	9	1	9	4	3.1
	• Quality of air in toilet and wash room	5	8	1	10	5	3.0
	• Air Quality of the common spaces, lobby and corridors	2	7	2	8	3	3.1
	• Overall indoor air quality	3	5	2	11	5	3.2
	• People' noise between rooms and spaces	3	3	7	28	4	3.6
Acoustic comfort	• The air / HVAC system noise	0	4	1	14	9	3.7
	• Noise from bulbs and lamps (lighting fixtures)	0	0	5	12	26	4.5

	• Noise from outside the buildings.	9	1	1	6	3	2.6
	• Overall acoustic comfort quality	6	8	1	12	3	3.0
Visual comfort	• Sufficiency and quality of universal lighting level in all spaces.	2	6	1	15	4	3.3
	• Adequacy and quality of artificial lighting level in all areas of the building.	3	8	1	14	4	3.2
	• Overall adequacy and quality of lighting in the house.	3	7	1	16	4	3.3
safety and Security	• General quality and capability of security and fire safety in the structure	6	9	1	15	4	3.0
QB	• Worth and hygiene of wash room facilities and all houses	3	6	1	12	4	3.2
SS	• Doors and windows quality, key to doors and cabinets.	6	8	1	13	0	2.8
	• Disable person's availability and quality of support services.	15	1	1	6	1	2.3
	• Water supply: Availability and quality	9	1	1	6	0	2.5
	• electrical supply: Availability and quality	0	1	2	8	0	2.8
	• Total availability of serviceability and QBSS	2	1	2	10	1	2.9

Source: Field Survey, 2019

Key: (VP) very poor, (P) poor, (M) moderate, (G) good, (VG) very good.

4.3.1 THE RESULTS OF QUALITY OF DESIGN (QD)

1. Layout Building: The 5 indicators under the building layout attribute recorded mean scores of (3.8), (3.7), (3.7), (3.6), and (3.9) this indicate that the performance degree of the staff quarters is above moderate. In accordance to the rating of the researcher, the overall quality of building layout items and attributes has the mean value of (3.7). from This result the quality of building layout attained a point of performance higher than the moderate.

2. Interior appearance: Total list of the quality of the appearance of interior of the buildings obtained mean grading scores of (2.8) and (2.9). The general quality and presentation of interior outlook achieved a mean value of (2.9), representing that the level of performance of the interior appearance of the staff quarters was less than the moderate which also denote that its poor.
3. Exterior appearance: the result of the external outlook is similar to that of the interior appearance but with a small reduction, the exterior appearance' indicator recorded mean scores of (2.8), (2.6), (2.0), and (1.9). The total appearance, quality, and presentation of external outlook of the building attained a mean value of (1.9), signifying a level of performance quit below moderate. Figure shows the picture of the external appearance.
4. Accessibility to facilities within the campus: This indicator and its items and attributes from their results underlined a fluctuation in their mean scores; three of five articles documented mean values of (3.1), (3.3), and (3.7), level of performance indicated here is higher than the moderate. By divergence to other items, two of five items attained mean values that is greater than the temperate performance with (2.4) given the mean score to be lower than moderate and one indicator given mean score of 4.0 which is quit above moderate. Consequently, a mean value of (3.0) was sustained by this indicator, showing that the performance level of the staff quarters building was beyond the moderate level in terms of ease of access to facilities that are on Federal Polytechnic compound.

4.3.2. Internal and External Quality (IEQ)

1. Thermal comfort: from the researchers' rating results, the general thermal comfort quality of the (natural and artificial) of the building recorded a mean value of (4.0).

This result point out that the warm air comfort of the building was ticked as “good” performance.

2. Quality of indoor air: The mean values of (3.1), (3.0), and (3.1) were obtained from the three items related to this indicator showing “moderate” performance. The overall indoor air quality gives moderate level of performance with (3.2) value.
3. Acoustic comfort: noise from outside the building recorded mean values (2.6) related to the indicator of acoustic comfort faintly less than the moderate level of performance, two attributes recoded (3.6), and (3.7) which represent moderate. And the fourth point Noise from bulbs and lamps achieved a mean value of (4.5), demonstrating performance level that is beyond the “good” level. For that reason, “moderate” performance with (3.0) value was picked which is the total acoustic comfort quality of the building
4. Visual comfort: Here we have two items which are, the natural lighting of the building with mean values of (3.3) and the artificial lighting of the building, recorded mean values of (3.2), both of them are slightly more than “moderate” in performance. The general quality and adequacy of lighting in the staff quarters building achieved (3.3) as a mean value which indicates a level that is higher than the moderate as performance.
5. Safety and Security: According to the rating of the researcher, the total worth and adequacy of fire safety and security of the building recorded a mean value of (3.0), this suggest that the performance level of this indicator was moderate.

4.3.3. Quality of the Services Supporting the Building (QBSS)

Serviceability: four of the attributes and items under this indicator were ticked as “poor” performance with mean values of (2.8), (2.5), (2.3), and (2.8). one out of the five items or attribute recorded (3.2) denoting a “moderate” performance. A mean value of (2.9) was analysed as the general availability, adequacy, and QBSS which is a little less than the moderate as performance level.

Figure 4.1 summarizes the percentages of the general indicators and their attributes and items as it relates to the building performance level. This is from the researchers’ rating survey, the results obtained. Based on 40 indicators and their items a total of 11% of attribute rated the building performance with “Very Poor” performance, items that rated the building performance with “Poor” are 18%, the building’s level of performance was rated “Moderate” by 30% of the experts and 32% of attribute rated the building “Good”. As a final point, “Very Good” performance grade of the building was 9%. In view of that, 80% as a total of 18%, 30%, and 32% of the researchers’ ranking on the level of performance of the building were rated among the “Poor” and the “Good.”

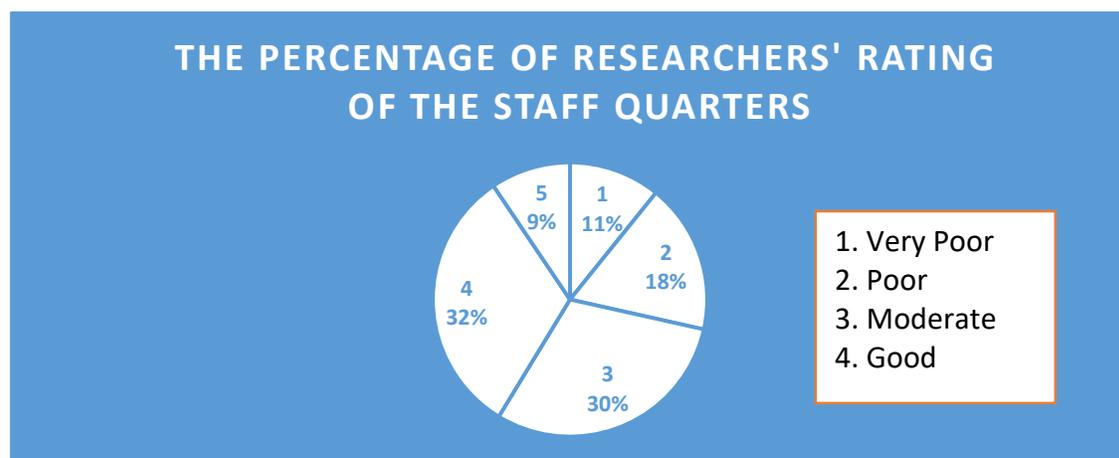


Figure 4.1: Building performance established on the researchers’ ranking to the general attributes and items of the staff quarters building

4.4.0 The Users' Satisfaction Levels in Terms of Design and Functionality

The level of user's satisfaction in terms of design and functionality was measured by the occupants of the staff quarters as its been done in post occupancy evaluation (POE). based on the users' satisfaction survey, building performance appraisal was carried out, this led to the following analysis.

Here, the respondents were required to rate their satisfaction level based on five-point Likert scale: "1" (Very Dissatisfied), "2" (Dissatisfied), "3" (Moderately Satisfied), "4" (Satisfied), And "5" (Very Satisfied). the respondents are expected to rate their satisfaction level founded on 40 performance attributes beneath the QD, IEQ, and QBSS items. These items and attributes of performance were comparable to the attributes delineated in the BPS. Table 4.4 demonstrates the percentages level of the users' satisfaction toward the listed performance elements.

Table 4.4. Showing the Total Response of Users' Satisfaction Level

POE PERFORMANCE LAYOUT AND CRITERIA			USER SATISFACTION LEVEL					
			VD	D	MS	S	VS	MEAN
QD	Building layout	• Adequate horizontal movement routes within the building	1	4	17	20	5	3.5
		• The interior building's vertical circulation routes, how adequate	0	2	22	18	5	3.6
		• Spatial configuration zoning / size / grouping of special rooms	6	2	22	13	4	3.1
		• Proportions, dimensions and the rooms ceiling height	0	2	23	16	5	3.5
		• Adequate of opening design (doors and windows)	0	4	21	17	5	3.5

IEQ	Interior appearance	• Complete building layout quality	1	3	20	17	6	3.5
		• Quality and demonstration of interior appearances	2	2	23	12	8	3.5
		• Superiority, colour, size, and spreading of furniture in the rooms and all spaces.	2	1 2	17	13	3	3.1
	Exterior appearance	• General interior appearance quality of the building	1	1 1	21	11	3	3.1
		• Quality and appearance of the finishes of exterior	4	1 0	18	15	0	2.9
		• Quality and presentation of landscaping and pavement surround the building.	8	1 2	14	11	2	2.7
		• If adequate sidewalks are available between buildings.	5	1 3	15	9	0	2.7
	Accessibility	• Quality of design of open space (green parks and walk ways)	1	1 1	17	16	1	3.1
		• Overall quality appearance and demonstration of exterior finishes of the building	0	1 0	18	13	3	3.2
		• Closeness to facilities of sport	1	1 0	20	13	2	3.1
		• Nearness to school of the children	3	7	14	15	6	3.3
		• Proximity to public transportation like motor cycle	1	6	10	16	6	3.5
		• Closeness to parking facilities for cars	0	3	21	16	6	3.5
		• Closeness to worship places	1	0	22	17	6	3.6
	Thermal comfort	• General adequacy and quality of accessibility.	1	3	16	16	8	3.6
		• Quality of natural and artificial thermal comfort of the building.	0	7	20	11	9	3.5
		Indoor air quality	• The quality of air in the rooms (dryness and smelliness)	0	4	21	17	1
• Quality of air in toilet and wash room	0		5	25	11	3	3.3	
• Air Quality of the common spaces, lobby and corridors	0		8	22	12	2	3.2	
Acoustic comfort	• General indoor air quality	0	0	21	13	6	3.6	
	• People' noise between rooms and spaces	0	0	21	13	10	3.8	
	• The air / HVAC system noise	0	1	20	17	7	3.7	

QBSS	Visual comfort	• Noise from bulbs and lamps (lighting fixtures)	0	1	20	23	2	3.6
		• The noise that comes into the buildings.	0	5	20	19	3	3.4
		• General quality of acoustic comfort	0	4	17	19	6	3.6
		• Sufficiency and quality of universal lighting level in all spaces.	0	4	21	16	3	3.4
		• Capability and quality of non-natural lighting level in all areas of the building.	1	4	19	18	4	3.4
	Safety and Security	• Overall quality of lighting in the house. and its adequacy	1	4	23	18	1	3.3
		• General quality and capability of security and fire safety in the structure	2	4	20	15	6	3.4
	Serviceability	• Worth and hygiene of wash room facilities and all houses	2	5	17	18	5	3.4
		• Doors and windows quality, key to doors and cabinets.	3	1	26	7	1	2.9
		• Disable person's availability and quality of support services.	6	1	14	9	2	2.7
• Water supply: Availability and quality		2	8	22	13	2	3.1	
• electrical supply: Availability and quality		4	1	24	3	1	2.6	
	• Total availability of serviceability and QBSS	2	8	23	10	4	3.1	

Source: Field Survey, 2019

Key: (VD) very dissatisfied, (D) dissatisfied, (MS) moderately satisfied, (S) satisfied, (VS) very satisfied.

4.4.1. The Results of Quality of Design (QD)

1. Layout of the Building: the entire items associated to the layout of the building (adequacy of horizontal movement, sufficiency of vertical movement, and sizes and measurements of spaces) recorded mean scores of (3.5), (3.6), (3.1), (3.5), and (3.5) correspondingly, meaning that the satisfaction level is greater than moderate

according to the users' responses, (3.5) mean value of the general of layout building quality items and attributes suggested that the worth of building layout attained a grade of satisfaction level that is beyond moderate.

2. Interior appearance: the two points under the quality of interior appearance recorded mean values of (3.5) and (3.1) respectively, these items are; quality and demonstration of interior finishes; and quality, sizes, colours, and spreading of furniture in all spaces. The general quality and demonstration of appearance of the interior aspect attained a mean value of (3.1), showing that the staff quarters users' satisfaction level was at moderate level.
3. Exterior appearance: The quality and demonstration of finishes of the exterior, quality and presentation of landscaping and pavements around the building, and availability of adequate sidewalks between buildings are three items that recorded mean scores of (2.9), (2.7), and (2.7), respectively; which shows a degree of satisfaction below the moderate level, only quality of open space designs recorded a mean value of (3.1), which indicate satisfaction level a little above moderate. Nevertheless, the overall exterior appearance and presentation of the building attained a mean value of (3.2), validating that users were satisfied moderately.
4. Accessibility to facilities on campus: All the items indicates a users' satisfaction level higher than the moderate with the following mean values of (3.1), (3.3), (3.5), (3.5), and (3.6), recorded from the attributes. Therefore, the users' satisfaction level for the staff quarters was well higher than the moderate level in terms of accessibility to facilities on campus with a mean value of (3.6).

4.4.2. Internal and External Quality (IEQ)

1. The Thermal Comfort: From the general quality of thermal comfort which are natural and artificial thermal comfort of the Federal polytechnic staff quarters (3.5) mean value was recorded from the responses of the occupants. The results revealed that the thermal comfort of the building was marked as “satisfied” with a certain tendency toward level of satisfaction that is moderate.
2. Quality of Indoor Air: the entire attributes related to this indicator achieved mean values as follows: quality of air in rooms (smelliness and dryness) (3.3), quality of air in toilets and washrooms, (3.3), and quality of air in lobby and common spaces (3.2), indicating that their satisfaction is moderate. The general indoor air quality was (3.6), which was above moderate level of satisfaction users’ responses.
3. Acoustic comfort: The mean values of (3.8), (3.7), (3.6), and (3.4) recorded from the four items connected to this indicator those items are: Noise from people between rooms and spaces, Noise from the air/HVAC system, Noise from lighting fixtures and Noise from outside the building respectively realising a users’ satisfaction level higher than moderate. In general, the quality of acoustic comfort of the building recorded a mean value of (3.6), demonstrating a level of satisfaction that is above the moderate.
4. Visual comfort: Both natural lighting of the building and artificial lighting of the building recorded mean values of (3.4) and (3.4), respectively, communicating that occupants were satisfied moderately. The general adequacy and quality of lighting in the building attained a mean value of (3.3) was recorded, presenting that users were satisfied moderately.

5. Fire Safety and Security: A mean value of (3.4) was recorded as the general quality and adequacy of security and fire safety of the building according to the users' responses demonstrating that the level of satisfaction for this indicator to some extent was above "moderate satisfaction."

4.4.3. Quality of Building Supporting Services (QBSS)

Serviceability: Three items and attributes (quality of doors and windows [key to doors and lockers], availability and quality of support services for disabled persons, and availability and quality of electrical supply) recorded mean values of (2.9), (2.7), and (2.6), correspondingly, indicating a degree less than the moderate level of satisfaction. The remaining two items and attributes under this indicator (quality, adequacy, and hygiene of washroom facilities and spaces and obtainability and quality of water supply) recorded mean values of (3.4), and (3.1), respectively, representing their satisfaction level a little above moderate. General availability, adequacy, and QBSS achieved a mean value of (3.1), which is also slightly higher than the moderate level of satisfaction. According to the users' responses,

From the results gotten survey through the users' satisfaction, Figure 4.2. give the percentages summary of general indicators and their items and attributes related to the users' satisfaction level. very dissatisfied users were 3% of the total, while dissatisfied users were 13%. Furthermore, moderately satisfied users were 43% of the occupants, and satisfied were 32%. Lastly, users that were very satisfied with the building items and attributes is 9%. For that reason, 88% of the respondents the for levels of satisfaction ranged from "dissatisfied" to "satisfied" This 88% proportion was fully compatible with the ratio gotten through the researchers' ranking (80% poor to moderate), which should be improved on to overcome the

defects and problems of building attributes and items that if left unattended to may become severe.

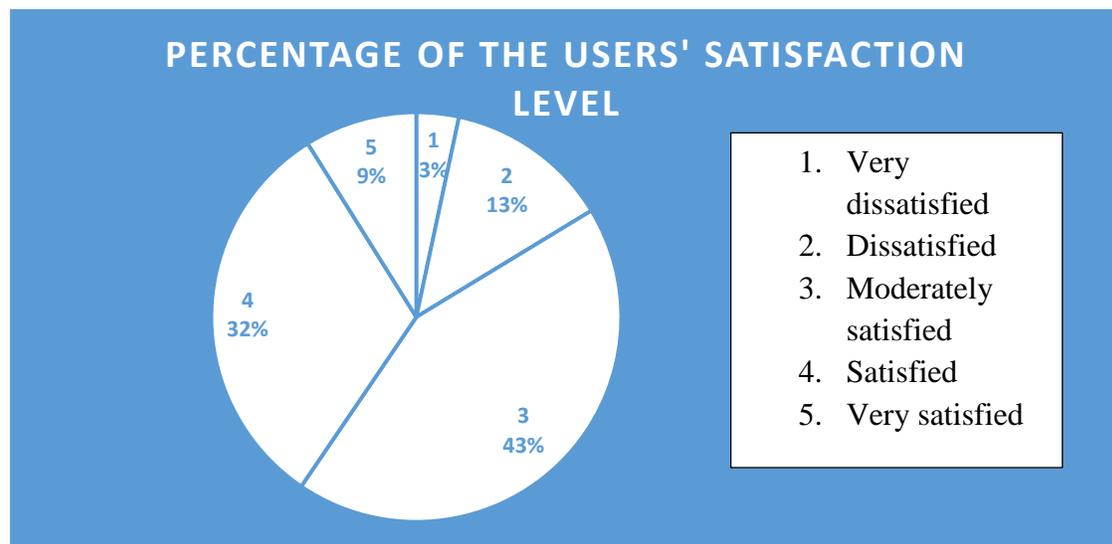


Figure 4.2. showing percentage of the satisfaction level of users to the general attributes and items of the staff quarters building

4.5.0 The Correlation Level Between Building Performance and the Users' Satisfaction of the Staff Quarters

The correlation test was administered to examine whether a significant relationship exists between the building performance level and the users' satisfaction level with similar performance attributes of houses in staff quarters of Federal Polytechnic Bida which is the final part of the analysis. The Pearson r correlation was used to performed correlation analysis. 0.721 was obtained as the correlation coefficient, which is greater than the empirically acceptable coefficient of 0.7 for basic research of reliabilities (Cournoyer and Klein, 2000). The correlation analysis was carried out using SPSS (Statistical Packages for the Social Sciences, version 25.00) a statistical software program.

The assumptions were tested with a two-tailed alpha level of 0.01 statistically. The correlation analysis was conducted based on the 40 items and attributes or indicators

specified in both questionnaires (researchers' rating and building users' satisfaction survey) to decide if the building performance show a relationship with the building users' satisfaction level. The suggested method of POE is effective and applicable for use in assessing the performance of polytechnic buildings and facilities especially staff quarters of Federal Polytechnic Bida where there is high correlation between building performance and users' satisfaction. Figure 4.3 below showed the correlation coefficients with clarifications of its sectors as follows:

1. Sector A: - very high correlations (≥ 0.8)

The very high correlation between users' satisfaction and building performance scores covers the indicators; Quality of furniture in all part of the house and rooms, General interior finishes quality, Superiority of landscaping and pavement, Quality of design of open space, General quality of building exterior finishes, Proximity to children school, Closeness to junctions of public transport, Proximity to places of worship, Air within rooms quality, Worth of air in wash room and toilet, Excellence of air in the common portions, Overall indoor air quality, Air/HVAC system Noise, General quality of acoustic comfort, Capability of natural illumination in all portions, Sufficiency of non-natural illumination in all spaces, Overall quality of illumination in the building, Complete fire safety and security quality. Doors and windows quality, key to doors, Accessibility of disable people support services, Appropriateness and worth of water supply, electrical supply: its availability and quality and Overall availability and QBSS.

The very high coefficients of correlation demonstrates that the building performance evaluation based on the researchers' rating of these indicators has a strong progressive relationship with the building users' satisfaction level.

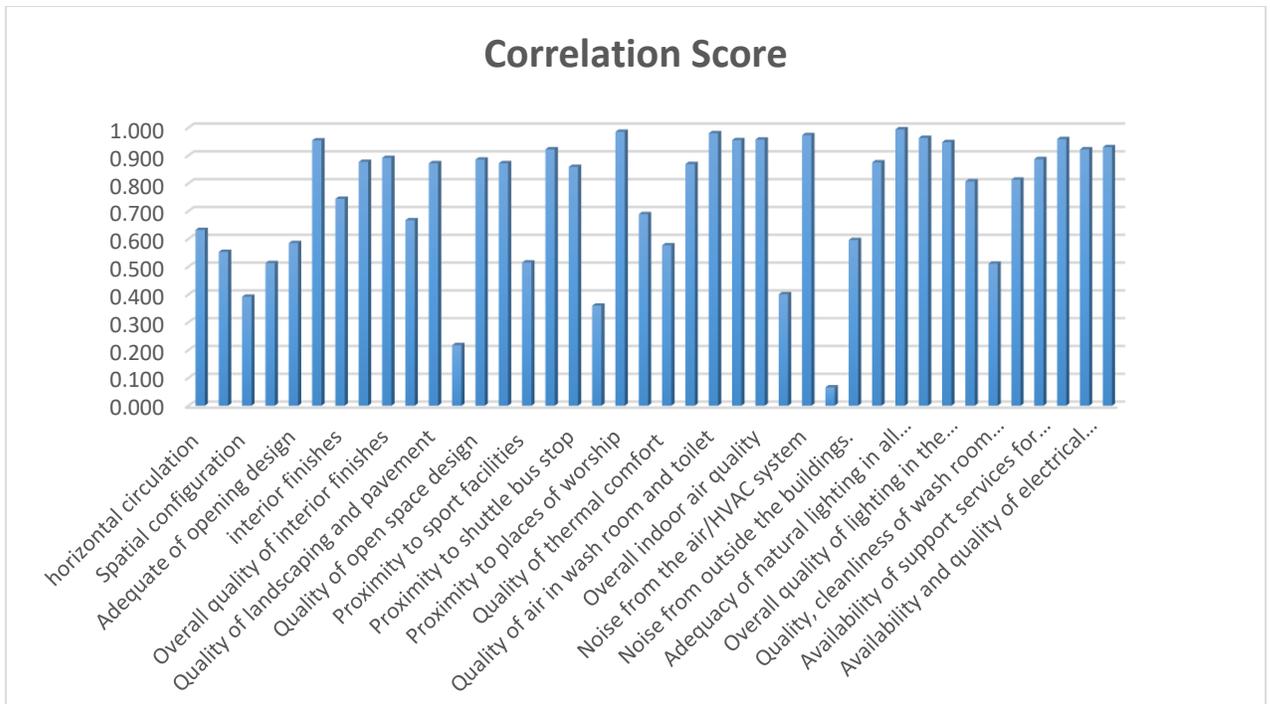


Figure 4. 3. The correlation level of building between the performance and the users' Satisfaction responses

2. Sector B: - correlations that are high (≥ 0.5)

The scores of correlation between building performance and satisfaction of users is positively high for the following indicators; horizontal movement, vertical circulation, ceiling height of the rooms, Adequate of opening design, interior finishes, Quality of exterior finishes, Proximity to sport facilities, Quality of thermal comfort, Outside sources of noise to the buildings, and Excellence, cleanliness of wash room facilities. This “B” sector reveal that review of the performance of the researchers’ rating of these indicators and the building users’ satisfaction level has a robust positive relationship with each other.

3. Sector C: - The correlations that are low (< 0.5)

The Spatial configuration, Availability of sidewalks between buildings, Proximity to car park facilities, Noise from people between rooms, and Noise from lighting fixtures have positively low correlation between building performance scores and the building occupants’ indicators.

Nevertheless, the low correlations do not constitute negative correlations. The low correlations are because the perception are difference in between the users of building and the appraisal administered by the researchers' rating on the performance levels of these indicators and attributes. The occupants have different understandings, observations, as well as different forecasts of the indicators and items that are outlined, which their general backgrounds, knowledge, technical skills, and working experiences are influenced by. Figure 4.3, show that a total the correlations 88% of the variables or indicators are in the sector fall within very high and high correlations in the middle of building performance scores (MIS) and users' satisfaction scores (MIS). For that reason, the method of POE established is operative and relevant for evaluating the facilities in addition to buildings of Federal Polytechnic staff quarters, because 35 indicators and attributes out of the 40 are in very high and high correlations sectors.

4.6 Summary of Findings

The objectives of this evaluation are to Identify the provided facilities in the staff quarters of Federal Polytechnics Bida, Assess the performance level of the existing staff quarters of the Federal Polytechnics Bida, Evaluate the satisfaction levels of the occupants in relations to design and functionality and to Examine the correlation that exist between the level of performance of the building in the staff quarters and the satisfaction of the users. This is with the aim to evaluate the staff quarters of the Federal Polytechnic Bida, using a tool known as Post-Occupancy Evaluation (POE).

The findings from the study are listed below;

1. The study finds out that POE acts an important role in the strategic planning of building management and can be positioned in the context of the staff quarters and it

has not been carried out before now. The appearance of defective problems can be reduced by POE, since the current performance of the building is assessed in a calculated process.

2. The result gotten from the research shows that there are some facilities that are available to all in the Federal Polytechnic Bida Staff Quarters, and there are some facilities that are not available at all these include; water treatment plant, drainage, family lounge, study room or library, hot/cold water source, internet connectivity, street light, air conditioner, store cupboards, shops and external kitchen.
3. Finding also shows the facilities that are available to some quarter and not to some others such as; sewage disposal, dining area, store, guest toilet, parking lots (plate 2) and garage. The reason for this is that the three of the quarters are two-bedroom flats and some quarter lack the facilities because of their location. Some quarters have tank for waste disposal while some born their waste leading to air pollution in the quarters (plate 3and 4)
4. Founded on the result gotten from user's satisfaction, all the overall qualities of the ten (10) attribute were responded above moderate giving the impression the accommodation of the staff quarters is moderately okay with analysis like building layout 3.5, internal appearance 3.1, external appearance 3.2, , thermal condition 3.5, accessibility 3.6, quality of the indoor air 3.6, acoustic comfort 3.6, visual comfort 3.3 security and safety 3.4 and serviceability 3.1 some of the analysis is in total contrast with the researchers survey that reads internal appearance 2.9, external appearance 1.9 and serviceability 2.9. this is due to lack of professional knowledge of the standard of habitable residential building.

5. Result gotten from the physical observation and walkthrough survey show that due to lack of landscaping in the staff quarters there are a lot of grasses and unregulated agricultural activities around are very close to the apartments this can breed reptiles in the quarters. (see plate 5, 6, 7 and 8). Result also show that a lot of soakaways are bad, some windows are bad, the exterior appearance is poor especially that of the two-bedroom flat (see plate 2,9, and 10).
6. The research finds out that an evaluation of this nature has not been carried out by the Federal Polytechnic management since they started occupying the quarters and that have make them not to hear out their complains easily to the management.

CHAPTER FIVE

THE CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This research focused on a Post-Occupancy Evaluation of the Staff Quarters of Federal Polytechnic Bida, Niger State. In this respect, the study observed and studied certain characteristics of the performance of the Federal Polytechnic Bida, residential environment in relations of its functional adequacy and physical quality; it also examined the satisfaction level of the occupants; and determined the relationship between the building's performance and occupants' satisfaction.

The correlation analysis was presented by this study between performance of building evaluated and satisfaction of users with their environment and facilities in the staff quarters of the Federal Polytechnic Bida of Niger State. The utmost important conclusion of this study is that, through post occupancy evaluation (POE), the federal polytechnic staff quarter gives the occupants a high level of satisfaction and that a valuable methodology for investigating the performance of buildings in general is offers by POE, particularly for the tertiary institutional structures like Federal Polytechnic Bida in Niger State.

The findings from this research also brings out some imperative thoughts and recommendations on the way to improve the staff quarters buildings performance. The findings show that most of the indicators in association to performance of the building (QD, IEQ, and QBSS) have a high correlation with the satisfaction levels of the building users. Therefore, the researcher recommends the using of the POE approach in improving the

performance of the staff quarters structures and facilities in the staff quarters region of the polytechnic.

5.2 Recommendations

1. The study recommends that to build a feedback mechanism by which the state of facilities and their performance can be monitored periodically, there is need to draw out an operational internal evaluation system. So as to guarantee a high level of satisfaction for users of facilities within the staff quarters area of Federal Polytechnic Bida. The technician's and the management executives of the works department would be assisted by this system in having a right perception as to the satisfaction residents derive from usage of these facilities. Where residents are dissatisfied with a particular facility, they will easily channel their complains through the feed back mechanism.
2. The research recommends that the institution should provide the facilities that are not available in the quarters seeing that it will increase satisfaction of the occupants for maximum productivity as worker. the facilities that are not available at all include; water treatment plant, drainage, family lounge, study room or library, hot/cold water source, internet connectivity, street light, air conditioner, store cupboards, shops and external kitchen.
3. The investigation recommends that from the analysis of the researchers' rating and the users' satisfaction of the already occupied quarters the remaining section of the quarters plan should be implement without adjustment to the three (3) bedroom and four (4) bed rooms but the two (2) bed room apartment should be improved upon by

adding thing like toilet, dining area, store and garage or a parking lot for the occupants.

4. The research also recommends that the occupants be educated on the ideal and standard condition of a residential house so that they will know and examine the property whenever they are asked to do so.
5. The study recommend also that the Federal Polytechnic should carry out renovation to improve the Exterior appearance of the quarters of things like presentation and quality of external finishes, superiority and performance of landscaping and pavements around the building, and accessibility of adequate sidewalks between buildings. The research also recommend that the works department of the Federal Polytechnic should work out a by-law to regulate the agricultural activities with the quarters and also ensure that the occupants takes care of the grasses around their premises.
6. The research also applaud that the Federal Polytechnic should carry out post occupancy evaluation for all the facilities in the polytechnic before carry out a development of similar design or use. The research also recommend that the works department of the Federal Polytechnic should embark of regular inspection that will give the occupants ease of complaint of their challenges with the staff quarters.

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APPENDIX A

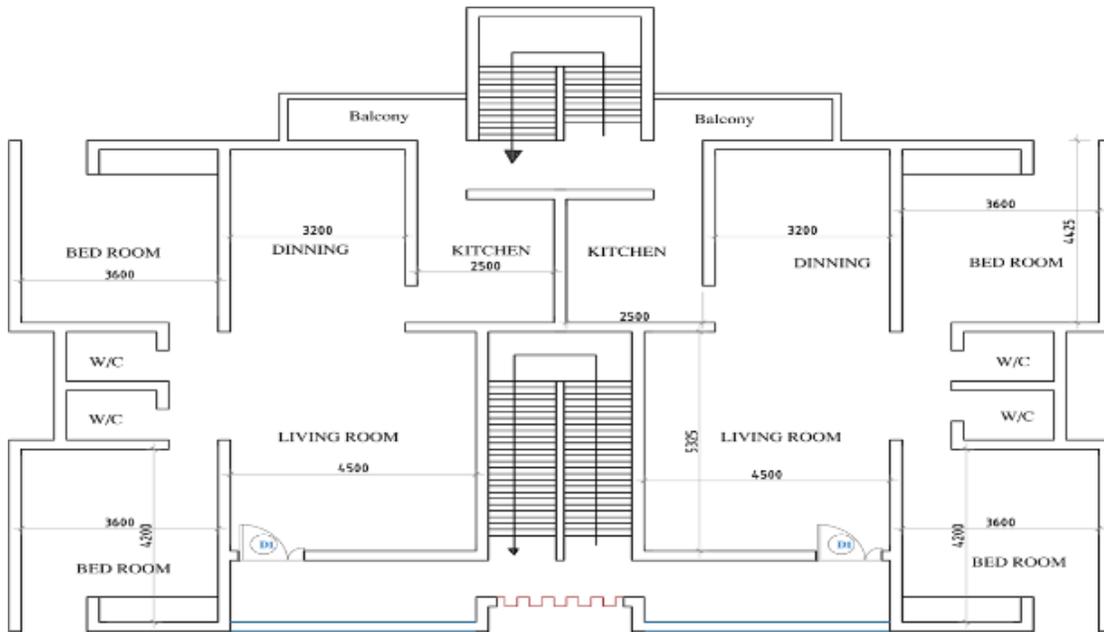


Figure 1.1; Showing Two Bed Room Apartment in Federal Polytechnic Bida Staff Quarters



Figure 1.2: Showing Three Bed Room Apartment in Federal Polytechnic Bida Staff Quarters

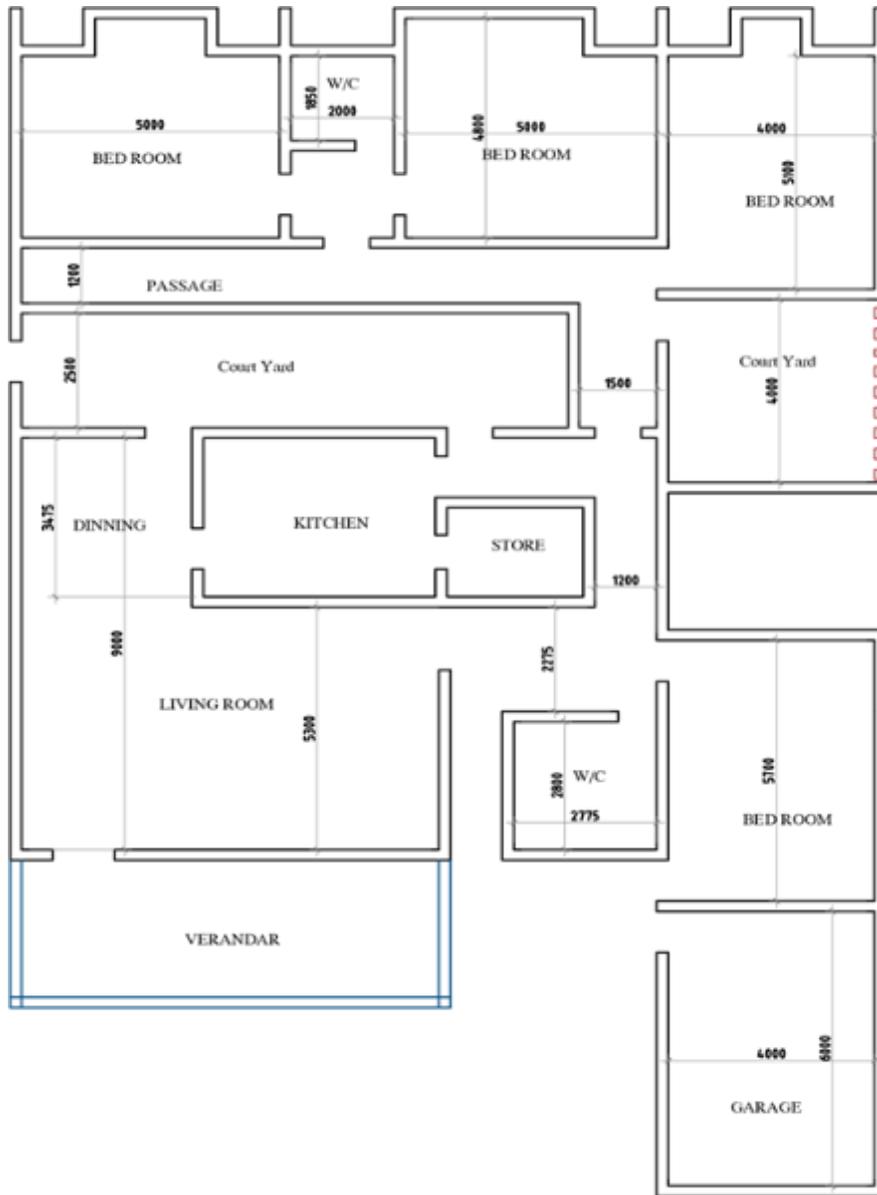


Figure 1.3: Showing Four Bed Room Apartment in Federal Polytechnic Bida Staff Quarters

APPENDIX B



Plate 2: Showing the external look of two bed-room and the parking space



Plate 3: showing the waste disposer tank



Plate 4: showing the refuse dump



Plate 5: Showing the grasses around the apartment



Plate 6: Showing the agricultural activity and access way to four-bedroom



Plate 7: Showing the surrounding of the area



Plate 8: Showing the damaged sock-away



Plate 9: Showing the damaged sock-away



Plate 10: Showing the damaged access way and lack of side walk way.

APPENDIX C

**FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGERIA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION**

I am a masters student of the above named institution currently carrying out a research work on the topic post-occupancy evaluation POE on staff quarters of federal polytechnic Bida” for the award of m. tech in estate management and valuation. I hereby solicit for your assistance in filling the questionnaire or ticking the appropriate spaces as the case may be.

Your response shall be treated with utmost care and confidentiality. Thank you.

Yours Faithfully

Yisa Gloria Gogo

Matric number: M.Tech/Set/2017/7403

Phone number: 08065963784

Please, kindly tick the appropriate option as () and fill in the gaps where necessary

1. The number of your quarters
2. Sex of the respondent (a) Male (), (b) Female ()
3. How old are you? (a) 20-35years () (b) 36-40years () (c) 41-55years () (d) 56-70years ()
4. Marital status (a) Married () (b) Single () (c) Divorced () (d) Widow ()
5. What is the highest level of your educational attainment? (a) HND () (b) Bachelor degree () (c) Master’s degree () (d) Others ()
6. What is your category of employment? (a) Senior academic () (b) Junior academic () (c) Senior non-academic () (d) Junior non-academic ()

7. For how long have you been occupying the quarters? (a) 0-5 years () (b) 6-10 years () (c) 11-15 years () (d) 16 and above ()
8. What type of apartment are you occupying? (a) Single detached () (b) Semi-detached () (c) High rise building () (d) Others specify ()
9. What is your rent per annum? ₦ (a) 30,000-40,000 () (b) 41,000-50,000 () (c) 51,000-60,000 () (d) 61,000 and above ()

SECTION A

FACILITIES AVAILABLE IN THE FEDERAL POLYTECHNIC BIDA STAFF QUARTERS.

FACILITIES	AVAILABLE	NOT AVAILABLE
Electricity Supply		
Water supply		
Waste dumping tank/drum		
Drainage		
Treatment Plant for Water		
Living Room		
Dining Area		
Kitchen		
Conveniences		
Store		
Visitors Room		
Family Lounge		
Guest Toilet		
Study room/library		
Hot/Cold water supply		
Internet Connection		
Street Light		
Parking Lot		
Ceiling Fan		
Air Conditioners		
Garage		
Store cupboard		
Shop		
External kitchen		

FEDERAL POLYTECHNIC STAFF QUARTERS PERFORMANCE LEVEL

REVIEW BASED ON THE RESEARCHER RATING

PLEASE TICK APPROPRIATE AS FOLLOWS: VP (VERY POOR) P (POOR) M (MODERATE) G (GOOD) VG (VERY GOOD)

POE PERFORMANCE LAYOUT AND CRITERIA OF THE QUARTERS			BUILDING PERFORMANCE LEVEL				
			VP	P	M	G	VG
DQ	Building layout	Adequate horizontal circulation routes in the building					
		Adequate vertical circulation routes within the building					
		Spatial configuration size/zoning/grouping of special rooms					
		Proportions and dimensions and ceiling height of the rooms					
		Adequate of opening design (doors and windows)					
		Overall quality of building layout					
	Interior appearance	Quality and presentation of interior finishes					
		Quality, size, color and distribution of furniture in all spaces and rooms.					
		Overall quality, appearance of the building interior finishes, furniture, materials and colors.					
	Exterior appearance	Quality and presentation of exterior finishes					
		Quality and presentation of landscaping and pavement around the building.					
		Availability of adequate sidewalks between buildings.					
		Quality of open space design (green parks and walk ways)					
		Overall quality appearance and presentation of building exterior finishes.					
	Accessibility	Proximity to sport facilities					
		Proximity to children school					
		Proximity to shuttle bus stop (public transportation)					
		Proximity to car park facilities					
		Proximity to places of worship					
		Overall adequacy and quality of accessibility.					

IEQ	Thermal comfort	Quality of thermal comfort (natural and artificial) of the building.					
	Indoor air quality	Quality of air in rooms (smelliness and dryness)					
		Quality of air in wash room and toilet					
		Quality of air in the lobby, common spaces and corridors					
		Overall indoor air quality					
	Acoustic comfort	Noise from people between rooms and spaces					
		Noise from the air/HVAC system					
		Noise from lighting fixtures (bulbs and lamps)					
		Noise from outside the buildings.					
		Overall acoustic comfort quality					
	Visual comfort	Adequacy and quality of natural lighting level in all spaces.					
		Adequacy and quality of artificial lighting level in all spaces.					
		Overall adequacy and quality of lighting in the building.					
	Security and safety	Overall quality and adequacy of security and fire safety in the building					
QBS	Serviceability	Quality, cleanliness of wash room facilities and all spaces					
		Quality of doors and windows, key to doors and lockers.					
		Availability and quality of support services for disable persons.					
		Availability and quality of water supply					
		Availability and quality of electrical supply					
		Overall availability and QBSS					

LEVEL OF USERS' SATISFACTION IN TERMS OF DESIGN AND FUNCTIONALITY

PLEASE TICK APPROPRIATE AS FOLLOWS VD (VERY DISSATISFIED) D(DISSATISFIED) MD (MODERATE SATISFIED) S (SATISFIED) VS (VERY SATISFIED)

POE PERFORMANCE LAYOUT AND CRITERIA OF THE QUARTERS			USER SATISFACTION LEVEL				
			V	D	M	S	VS
DQ	Building layout	Adequate horizontal circulation routes in the building					

		Adequate vertical circulation routes within the building					
		Spatial configuration size/zoning/grouping of special rooms					
		Proportions and dimensions and ceiling height of the rooms					
		Adequate of opening design (doors and windows)					
		Overall quality of building layout					
	Interior appearance	Quality and presentation of interior finishes					
		Quality, size, color and distribution of furniture in all spaces and rooms					
		Overall quality, appearance of the building interior finishes, furniture, materials and colors.					
	Exterior appearance	Quality and presentation of exterior finishes					
		Quality and presentation of landscaping and pavement around the building.					
		Availability of adequate sidewalks between buildings.					
		Quality of open space design (green parks and walk ways)					
		Overall quality appearance and presentation of building exterior finishes.					
	Accessibility	Proximity to sport facilities					
		Proximity to children school					
		Proximity to shuttle bus stop (public transportation)					
		Proximity to car park facilities					
		Proximity to places of worship					
		Overall adequacy and quality of accessibility.					
IE Q	Thermal comfort	Quality of thermal comfort (natural and artificial) of the building.					
	Indoor air quality	Quality of air in rooms (smelliness and dryness)					
		Quality of air in wash room and toilet					
		Quality of air in the lobby, common spaces and corridors					
		Overall indoor air quality					
	Acoustic comfort	Noise from people between rooms and spaces					
		Noise from the air/HVAC system					

		Noise from lighting fixtures (bulbs and lamps)					
		Noise from outside the buildings.					
		Overall acoustic comfort quality					
	Visual comfort	Adequacy and quality of natural lighting level in all spaces.					
		Adequacy and quality of artificial lighting level in all spaces.					
		Overall adequacy and quality of lighting in the building.					
	Security and safety	Overall quality and adequacy of security and fire safety in the building					
	Serviceability	Quality, cleanliness of wash room facilities and all spaces					
		Quality of doors and windows, key to doors and lockers.					
		Availability and quality of support services for disable persons.					
		Availability and quality of water supply					
		Availability and quality of electrical supply					
		Overall availability and QBSS					