

POST OCCUPANCY EVALUATION OF POSTGRADUATE STUDENTS' HOSTEL FACILITIES AND SERVICES

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Abstract

Construction Post Occupancy Evaluation studies, especially those related to students' hostels has received worldwide attention. However, this has not been the case in Ghana. This study sought to evaluate the performance of two postgraduate hostel buildings (Steven Paris Hostel and Transport Hostel) on Kwame Nkrumah University of Science and Technology (KNUST) campus with regards to services rendered by management, functionality and environmental friendliness. The objective was to investigate the level of students' satisfaction with some selected facilities and services available at the hostels. A survey of 70 postgraduate students who were residents of the two hostels were conducted to achieve the objective of the study. Data obtained from the survey was analyzed by Relative Satisfaction Index (RSI) and mean aggregate RSIs. The findings from the study revealed that occupants are generally "Satisfied" (Mean Aggregate RSI of 68.05) with the facilities and services available at the postgraduate hostels. The occupants showed high satisfaction level with the bedroom, television room, bathroom, kitchen, meeting room, support services and lobbies. However, they were indecisive about their satisfaction with management of the hostels and the laundry room. The feedbacks obtained from the occupants should inform any decisions regarding future renovations and effective management of the hostels. The study recommends effective POEs and maintenance management practices for the institution's hostel facilities to improve the comfort of users.

Key words: Hostels, post occupancy evaluation, facilities, services, satisfaction of students.

INTRODUCTION

Building performance evaluation (BPE) or post occupancy evaluation (POE) of buildings has received attention worldwide (Amaratunga and Baldry, 2000). However, in Africa, this has not been the case (Olatunji, 2013). According to Baird (2001), POE is a generic term for the assessment of existing buildings and facilities. It assesses how good buildings match users' needs and identifies ways to improve the overall processes of erecting buildings to satisfy its intended purpose (Olatunji, 2013; Barrett and Baldry, 2003). The continuous increase in students' admission into tertiary institutions in Ghana without the commensurate increase in halls of residences had resulted in a number of hostel facilities springing up yearly. Hostel facilities run by universities are preferred by many students in tertiary institutions in Ghana because of the high level of security offered to them. According to Lai (2013), POE studies, especially those related to students' hostels have received much attention across the world.

However, POE as a concept has not been fully embraced by academicians and practitioners in Ghana. This is evident in the difficulty in getting literature on the topic. This paper reports on a post-occupancy evaluation of the main technical and functional performances of post-graduate students' hostels at the Kwame Nkrumah University of science and Technology, Kumasi, Ghana. Only post-graduate hostels were considered in this study because the occupants of such hostels were deemed to have had quite a lot of experiences with other forms of hostels. Therefore, they were qualified to provide answers that could be used as a basis to improve on other hostels (undergraduate hostels). Research attempts in the area of POE of hostel facilities in Ghana is little. For buildings to be most effective, building performance evaluation must happen throughout the lifecycle of the building. Since the two hostels were constructed, no such evaluations have taken place. POE is a way of providing feedback throughout a building's lifecycle from initial concept through to occupation. The information from the occupants' feedbacks can be used for informing future projects, whether it is on the process of delivery or technical performance of the building. As KNUST has the vision of gradually moving into more of a postgraduate institution, it is very likely that more postgraduate hostels will spring up in no time. The study therefore evaluated the performance of two postgraduate hostel buildings (Steven

Paris Hostel and Transport Hostel) with regards to services provided by management, functionality and environmental friendliness. This study particularly investigates the level of students' satisfaction with some selected facilities and services available at the hostels.

LITERATURE REVIEW

Overview of post occupancy evaluation (POE)

One of the characteristics of the post-occupancy evaluation concept is its mutability (Preiser, 2002). It is of little surprise to find that there are several interpretations that have been proposed in order to define the subject. One example is the notion that Post-Occupancy Evaluation is a process of systematically evaluating the performance of buildings after they have been built and occupied for some time (Preiser, 2002). Preiser *et al.* (1988) suggested that POE could be defined as a more specific process of systematic data collection, analysis, and comparison with explicitly stated performance criteria pertaining to occupied built environments. According to Friedman *et al.* (1978), POE is an appraisal of the degree to which a designed setting satisfies and supports explicit and implicit human needs and values of those for whom a building is designed. Post Occupancy Evaluation is also defined as the examination of the effectiveness for human users of occupied design environments (Zimring and Reizenstein, 1980). While POE evaluations carried out in the 1970s and 1980s were targeted at performance of buildings, more recent developments in POE have been focused on Building Performance Evaluation (BPE) and Universal Design Evaluation (UDE), emphasising a "more holistic and process-oriented evaluation" (Preiser, 2002). This means that POE evaluations started to consider non-technical factors influencing the design and building of facilities.

Over the years researchers worldwide have been dedicated to defining the concept of POE. According to Oladiran (2013), there is no industry-accepted definition for POE. There is also no industry-accepted standardized method for conducting POE studies (Oladiran, 2013; Federal Facilities Council, FFC, 2001). Post occupancy evaluation is defined as any process directed towards determining and improving building performance in relation to users' satisfaction and the built environment (Oladiran, 2013). Walker (2011) defined POE as a systematic evaluation of a designed and occupied setting from the perspective of those who use it. According to Khalil and Husin (2009), POE provides structural review of the technical, functional and strategic performance of a building during occupation and delivers feedback on performance throughout its service life. The Department of Public Works, DPW, (2009) defined POE as the process for measuring a project's success and centres on the needs of the occupants. It is the evaluation of the performance of buildings during usage for improvement and fitness for purpose (Nawawi and Khalil, 2008; Stevenson, 2008). It is the process of evaluating building systematically and comprehensively after it has been occupied (Lee and Oh, 2007; Hewitt *et al.*, 2006). It is a broad term for a variety of activities targeted at appraising the performance of completed buildings and the satisfaction occupants derive from the created environment (Hewitt *et al.*, 2006). Preiser and Vischer (2004) described POE as the activity of evaluating buildings in use. For the purpose of this study, POE is defined as a broad term for a variety of activities targeted at appraising the performance of completed buildings and the satisfaction occupants derive from the created environment (Hewitt *et al.*, 2006).

Related studies on POE

Post Occupancy Evaluation studies have been conducted periodically across public and private sectors (Woon *et al.*, 2015). POE studies, especially those that deal with student hostels have gained attention across the world (Liu *et al.*, 2013). According to Liu *et al.* (2013), Hassanaian (2008) conducted a POE study to investigate the main technical and functional performance of students' hostel facilities in Saudi Arabia. In Malaysia, a POE study was undertaken to identify the level of satisfaction of students with hostel facilities in universities (Najib *et al.*, 2011). Also, in Nigeria, quite a number of studies have been conducted on POE of university students' hostel facilities. Oladiran (2013) conducted a POE study on eleven students' hostel accommodation and their users' satisfaction in the University of Lagos. Oladiran's study showed that the level of satisfaction of the users with the hostel accommodations was good in terms of indoor temperature, natural lighting, ventilation and water supply among others. Adewunmi *et al.* (2011) also carried out a POE on the facilities of postgraduate student hostels in Nigeria. The findings of their study revealed that the respondents of the study were satisfied with cleanliness, lighting, comfort and noise levels, among others. In a similar study, Ojo *et al.* (2013) conducted a POE of privatized students' hostels at the

Federal University of Technology campus in Akure, Nigeria. Their study revealed that majority of their respondents indicated dissatisfaction with most of the facilities available on the campus. Eke *et al.* (2013) conducted a POE assessment of students' residences in South Africa. The results from their survey revealed that the students of the residences were only satisfied with the quality of artificial lighting in their rooms and disabled facilities. However, they were dissatisfied with the quality of natural light, size of study halls, among others.

Currently, attention has also been shifted towards the POE of other buildings aside hostel accommodations (Woon *et al.*, 2015). Nawani and Khalil (2008) developed a general guideline for POE practice, specifically for government and public buildings in Malaysia. The findings from their study revealed that about 74 percent of the aspects of the buildings inspected highly correlated with the occupants' satisfaction. Emuze *et al.* (2013) also conducted a POE of office buildings in a Johannesburg country club estate. The findings from their study revealed that the satisfactory level of the occupants was very low and that the employees had limited control over parameters such as air ventilation, artificial lighting and noise in their offices. Similar studies have also been conducted in other areas in different countries (Woon *et al.*, 2015; Then, 2005; Zagreus *et al.*, 2004). Although the significance of POE has been recognized by many authors, there exist a lot of obstacles (Woon *et al.*, 2015). From these issues presented, it becomes quite difficult to critique literature because no two POE studies are the same. The studies which have been presented are from different parts of the world and in different settings. As a result of that buildings within those settings may differ in their characteristics. What one user prefers might be different from that of another. This notwithstanding, one can always compare the results of a POE study on a particular building to that from another region. This is because POE, irrespective of where it is carried out seeks to achieve the comfort and satisfaction of users of buildings. For the purpose of this study, POE is defined as a broad term for a variety of activities targeted at appraising the performance of completed buildings and the satisfaction occupants derive from the created environment (Hewitt *et al.*, 2006).

RESEARCH METHODOLOGY

The study sought to evaluate the performance of two postgraduate hostel buildings (Steven Paris Hostel and Transport Hostel) on KNUST campus with regards to services rendered by management, functionality and environmental friendliness. The objective was to investigate the level of students' satisfaction with some selected facilities and services available at the hostels. In addition to the six halls of residences provided by KNUST for students, there are five other hostels. Of these five hostels, two are for postgraduate students. The study therefore targeted the two postgraduate hostels for in-depth studies to be conducted. A literature search was conducted on the performance indicators of the buildings (Woon *et al.*, 2015; Eke *et al.*, 2013; Liu *et al.*, 2013; Ojo *et al.*, 2013; Olatunji, 2013; Adewunmi *et al.*, 2011; Najib *et al.*, 2011; Hussanaian, 2008). Variables extracted from literature were sorted and adapted to suit the Ghanaian situation. A survey was used to assess the occupants' level of satisfaction with facilities and services rendered to them at their various hostels. Structured questionnaire on the students' accommodation environment was designed to cover important issues such as bedroom facilities, washroom facilities, laundry rooms, kitchens, amongst others. A convenience purposive sampling approach was adopted to interview 70 postgraduate students residing in the hostels.

The questionnaire was divided into two main sections. The first section sought information on the demography of the respondents. The second section required the respondents to indicate their level of satisfaction with key facilities and services provided in the hostels. The respondents were asked to score on the Likert scale of 1 to 5 (where 1=Very dissatisfied and 5= Very satisfied) their levels of satisfaction with the facilities and services. Data obtained from the survey was analysed by the Relative Satisfaction Index (RSI). The RSI was calculated from the formula:

$$RSI = \frac{1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{A \times N} \times 100$$

Where RSI = Relative Satisfaction Index, n_1 is the number of criteria with strongly dissatisfied, n_2 is the number of criteria with dissatisfied, n_3 is the number with neither satisfied nor dissatisfied, n_4 is the number with satisfied, n_5 is the number of criteria with strongly satisfied, N = total number of respondents and A = highest weight (i.e. 5 in this case).

The overall satisfaction levels of the various facilities were ranked based on their Mean Aggregate RSI as indicated:

$$\text{Mean Aggregate RSI} = \frac{\sum \text{RSI}}{N}$$

Where $\sum \text{RSI}$ = Cumulative Relative Satisfaction Index for the facility and N = number of items being considered under each facility. The interpretations of the mean RSI values are shown in Table 1.

Table 1: Interpretation of mean RSI values

RSI Score (%)	Satisfaction Level
1-20	Very dissatisfied
21-40	Dissatisfied
41-60	Neither satisfied nor dissatisfied
61-80	Satisfied
81-100	Very satisfied

Ojo and Oloruntoba (2012)

RESULTS AND DISCUSSION

Demography of respondents

Students' perception of hostel facilities and halls of residences could be affected by demographic issues such as gender, nationality, duration of residency, etc. (Khozaei *et al.*, 2010). To achieve the purpose of determining the satisfaction levels of the students, the understanding of their socio-economic background was very important. The demography of the respondents considered their sex, marital status, their ages and their level of postgraduate studies.

Table 2: Demography of respondents

Demography	Number of students	Percentage
Sex of respondents		
Males	40	57%
Females	30	43%
Marital status of respondents		
Single	50	71%
Married	20	29%
Widow/widower	0	0%
Age of respondents		
<20 years	0	0%
21-30 years	50	71%
31-40 years	15	21%
> 40 years	5	8%
Level of students		
Level 100	10	14%
Level 200	45	64%
Other (those who have stayed for more than 2 years)	15	22%

It was very important to ask about the background of the respondents because it allowed the researchers to determine whether the right **target audience were being reached** and whether or not the study was gathering the information it was effectively seeking. Table 2 shows that 57% of the respondents were males, while 43% were females. Majority of the respondents were single and contributed to 71%, 29% were married with no widow/widower encountered. Seventy-one percent (71%) of the respondents were within the middle age group, with ages ranging between 21-30 years. Twenty-one percent of the respondents were between the ages of 31-40 years, with 8% greater than 40 years old. Table 2 further shows that 45% of the respondents were in Level 200, probably nearing the completion of their postgraduate studies. This is because on KNUST campus, most of the postgraduate studies span for a period of two years for Master of Science degrees, and three years for Doctor of Philosophy degrees (PhD). Twenty-two percent of the respondents were in other levels,

probably in their PhD degree programmes. Only 14% of the respondents were in Level 100. From these results, it is seen that 86% of the respondents that formed the majority had stayed in the hostels for two or more years and had a greater idea of the conditions of the facilities in the buildings.

Students' level of satisfaction with facilities

Table 3 shows the students' level of satisfaction with the bedrooms, bathrooms, laundry rooms, kitchen, television rooms, meeting rooms, lobbies, among others in the two hostels. The results in Table 3 show that the students were generally satisfied with all the bedroom conditions with the exception of the lack of supply of Wi-fi to the bedrooms. The findings further revealed that the students were satisfied with the privacy they had in their bedrooms, the number of students per room (a maximum of two), adequate rest, security, and lighting, among others in their bedrooms.

With regards to the bathrooms, the satisfaction levels of the students were high. The mean scores of all the conditions considered with reference to the bathrooms were above the mean values of 2.5, indicating the students' satisfaction with those conditions. According to the students, they were satisfied with the number of users per bathroom, cleanliness of the bathroom, arrangements of the bathroom, water flow, amongst others.

The students' satisfaction level of the conditions provided in the laundry rooms, kitchens, television rooms, meeting rooms, etc. were all high, which indicates that these conditions met the students' expectations.

Table 3: Occupants' Level of Satisfaction with Hostel Facilities and Management

Facilities and Services	Mean	RSI	Ranking	Mean Aggregate RSI
Bedroom				
Privacy in bedroom	4.54	90.8	1 st	77.00
Number of persons in bedroom	4.52	90.4	2 nd	
Sleeping in bedroom	4.44	88.8	3 rd	
Security of property in bedroom	4.08	81.6	4 th	
Lighting adequacy in bedroom	4.08	81.6	4 th	
Studying in bedroom	4.00	80.0	6 th	
Furniture arrangement in bedroom	3.64	72.8	7 th	
Ventilation in bedroom	3.54	70.8	8 th	
Colour of furniture and finishing in bedroom	3.38	67.6	9 th	
Wi-Fi in bedroom	2.28	45.6	10 th	
Bathroom				
Number of people sharing the bathroom	3.83	76.6	1 st	72.60
Cleanliness of the bathroom	3.81	76.2	2 nd	
Bathroom arrangement	3.67	73.4	3 rd	
Water flow	3.44	68.8	4 th	
Location of bathroom	3.40	68.0	5 th	
Laundry room				
Number of people sharing the laundry room	2.84	56.8	1 st	54.52
Location of laundry room	2.81	56.2	2 nd	
Cleanliness of the laundry room	2.80	56.0	3 rd	
Laundry room arrangement	2.64	52.8	4 th	
Provided amenities for laundry	2.54	50.8	5 th	
Kitchen				
Kitchen orientation	3.80	76.0	1 st	72.55
Number of people sharing the kitchen	3.76	75.2	2 nd	
Cleanliness of the pantry	3.67	73.4	3 rd	
Provided amenities for kitchen	3.28	65.6	4 th	
Television room				

Ventilation in TV room	4.04	80.8	1 st	75.53
Location of TV room	3.85	77.0	2 nd	
Cleanliness of the TV room	3.82	76.4	3 rd	
Number of people sharing the TV room	3.80	76.0	4 th	
TV room orientation	3.67	73.4	5 th	
Provided amenities for TV room	3.48	69.6	6 th	
Meeting room				
Lighting in meeting room	4.00	80.0	1 st	71.83
Ventilation in meeting room	3.66	73.2	2 nd	
Cleanliness of the meeting room	3.55	71.0	3 rd	
Having discussions in meeting room	3.55	71.0	3 rd	
Meeting room arrangement	3.47	69.4	5 th	
Location of meeting room	3.32	66.4	6 th	
Lobby				
Lobby orientation	3.23	64.6	1 st	61.45
Location of lobby	3.20	64.0	2 nd	
Provided amenities	2.98	59.6	3 rd	
Entertaining guests or relatives in the lobby	2.88	57.6	4 th	
Support service facilities				
Garbage disposal	3.88	77.6	1 st	66.91
Parking lots	3.85	77.0	2 nd	
Guards on duty	3.57	71.4	3 rd	
Lifts, stairs, electrical wiring	3.48	69.6	4 th	
Fire safety	3.42	68.4	5 th	
Water supply	3.35	67.0	6 th	
Cafeteria, mini market and mini bookshop	1.87	37.4	7 th	
Management				
Management's response to minor repairs	3.23	64.6	1 st	60.04
General maintenance	3.17	63.4	2 nd	
Availability of management to complaints	3.13	62.6	3 rd	
Amount of hostel fees paid relative to hall services provided	2.81	56.2	4 th	
Management response to complaints	2.67	53.4	5 th	

Table 4 provides the overall satisfaction level of the students with regards to the various facilities. Out of the nine general facilities which the students were asked to assess, they were satisfied with seven. Table 4 shows that the students were satisfied with the facilities such as the bedroom, television room, bathroom, kitchen, meeting room, support services and lobbies. However, they were indecisive about their satisfaction with management of the hostels and the laundry room. Furthermore, the students were very satisfied with the conditions in the bedrooms (with a mean RSI of 77), followed by television room (with a mean RSI of 75.53), bathroom (with a mean RSI of 72.60) in that order.

Table 4: Summary of total Satisfaction level of the Students

Facilities and Service	Mean Aggregate RSI	Ranking	Response Value
Bedroom	77.00	1 st	Satisfied
Television room	75.53	2 nd	Satisfied
Bathroom	72.60	3 rd	Satisfied
Kitchen	72.55	4 th	Satisfied
Meeting room	71.83	5 th	Satisfied
Support services	66.91	6 th	Satisfied
Lobby	61.45	7 th	Satisfied
Management	60.04	8 th	Neutral
Laundry room	54.52	9 th	Neutral

Overall satisfaction level

68.05

Satisfied

According to Konara and Sandanayake (2010), it is always important to carry out a POE in buildings so that the results can be used to gauge the level of satisfaction of designers, occupants and owners of that building, and to determine whether the occupants are happy or not. From this study, it can be said that the occupants who were interviewed in the two hostels were happy and satisfied. However, these findings corroborate and contradict literature at the same time. In a study by Oladirin (2013), some hostel facilities for tertiary institutions located in Lagos lacked basic amenities such as laundry rooms and meeting rooms. Their study revealed that some of the undergraduate hostel facilities had no kitchens, while those with kitchens were not functioning. These notwithstanding, the level of users' satisfaction with some parameters such as noiselessness, indoor temperatures, natural lighting, ventilation and water supply was good. However, the satisfaction level with electrical fittings, space, cleanliness and comfortability were not good. In a similar study conducted by Khozaei *et al.* (2010) Malaysia, it was revealed that there existed a significant positive correlation between the level of satisfaction of students and the sense of attachment to their places of abode. In another study by Akinluyi (2013), occupants of hall of residences in the Obafemi Awolowo Hall at the Obafemi Awolowo University in Nigeria expressed different levels of satisfaction with their hall conditions. The findings from the study revealed that most of the students interviewed were not satisfied with their bedroom conditions. These differences in the levels of satisfaction of students living in hostels considered in the various studies could stem from the conditions provided within the particular hostels assessed. In the case of the current study, the facilities provided were improved, probably because the hostels were occupied by post-graduate students.

CONCLUSIONS

The study sought to evaluate the performance of postgraduate hostel buildings on KNUST campus with regards to services rendered by management, functionality and environmental friendliness. The objective was to investigate the level of students' satisfaction with several facilities and services in the hostels. The findings from the survey indicate that occupants are generally "Satisfied" with the facilities and services available at the postgraduate hostels. The occupants showed high satisfaction level with the bedroom, television room, bathroom, kitchen, meeting room, support services and lobbies. However, they were indecisive about their satisfaction with management of the hostels and the laundry room. These feedbacks obtained should inform any decisions regarding future renovations and effective management of the hostels. The study recommends effective POEs and maintenance management practices for the institution's hostel facilities to improve the comfortability of users.

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