

Post-Occupancy Evaluation of On-Campus Students' Residences: A Literature Review

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Abstract: *Post-occupancy evaluation (POE) of students' residences is a growing practice. The paper presents a review of literature on post-occupancy evaluation of on-campus residential facilities for students in Nigeria's tertiary schools. The study aimed to collate and articulate information on POE of students' dwellings that could be useful for informing future projects. Areas covered include POE essence, methods, benefits, and challenges. The researchers pursued the goal by primarily reviewing existing literature on the subject. These information were then integrated into a whole. The study found that POE is impeded by self-preservationist disposition of professionals. Benefits of POE according to the study include the possibility of energy consumption minimization in students' hostels. The study concluded that POE would make a difference in the lives of campus dwellers if carried out routinely.*

Keywords: *Dormitory, Residential satisfaction, Building performance, Built industry.*

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I. Introduction.

Post-occupancy evaluation (POE) is an exercise that is carried out by both academics and industry practitioners. Many of these researchers have undertaken studies on students' residential satisfaction¹. The quality of student housing available in an institution influences the school's chances with admission seekers². This makes it imperative to invest in making students' on-campus residences better. POE has served in providing useful feedback for improving the quality of building procurement and facility management. The authors, therefore, aimed in this study, to produce an integrated body of information obtained by reviewing the existing literature on POE of on-campus students' residences. This information could then serve as a point of departure for persons contemplating POE of student hostels.

II. Literature Review

Definition and essence of POE:

Several scholars have defined POE varyingly. It is a method for collecting data on facilities performance. POE is useful for analyzing data, and recommending ways of improving facilities³. Another author defines POE as any process channelled towards determining and enhancing the performance of buildings, relative to users' satisfaction and the built environment⁴.

POE is also a process of evaluating a building systematically and rigorously, after been occupied. Furthermore, POE is the systematic assessment of building performance during service, usually including analysis of the users' perceptions, for various purposes. POEs are typically "milder" than majority of technical evaluations. They are often associated with the assessment of psychological needs, attitudes, organizational goals and changes, and human perceptions. POE in essence, seeks answers to enquiries about the needs, activities, and goals of the people and organization who use a facility. These include maintenance, building operations, and design-related questions.⁵

Moreover, POE commonly includes building monitoring to support the findings of the user surveys and assess the level of success of design strategies in meeting design performance targets or reference baselines⁶. At the core of POE, is inquisition into how the building is performing, how satisfied the occupants are, and the nexus between building performance and occupants' perception. In other words, POE asks, 'are people happy?' and 'did the building measure up?'⁷.

Purpose of POE:

POE serves many purposes. This is partly because it is a tool at the disposal of nearly all stakeholders in the built environment. It serves to provide both subjective and objective response that can inform planning and practice during the course of the building's useful life, from design to occupation⁸. POE of a building is a prescribed study to ascertain whether a specific facility has met the goals and objectives intended in the original

plan. It also provides practical information useful for significant projects ahead. Furthermore, POE serves the following purposes:

1. Measurement of the functionality and appropriateness of the design relative to laid down performance standards.
2. Honing of the facilities.
3. Adapting of programmes for repetitive facilities.
4. Studying the effects of buildings on their occupants
5. Examining the application of emerging concepts and
6. Justification of actions and expenses on buildings and other facilities.⁵

The position of a fairly recent study conducted in north-west Nigeria, is that POE is usually intended to compare systematically and vigorously, the actual performance of completed and occupied buildings with explicitly stated performance objectives⁹. Meanwhile, an earlier study concludes that POE is one of the best methods of obtaining performance data on existing buildings⁶.

Methods commonly employed in POE of students' residences:

The following are strategic techniques usually employed in housing POE:

1. Questionnaires administered to residents
2. Environmental audit e.g. CIBSE TM22
3. Semi-structured interviews of residents, design team, building team, etc.
4. Focus group discussions
5. Logging residents' activities
6. Thermal imaging
7. Residents video diaries
8. Field observations of user behaviour
9. Wireless monitoring of water and energy consumption
10. Meter readings.⁷

A team of researchers in 2015 who were interested in student housing satisfaction in Akure, Nigeria, adopted a descriptive approach in their study. They collected data from respondents through the use of close-ended questionnaires. They also used stratified random sampling technique to reach the target population. They analyzed data obtained through Relative Satisfaction Index (RSI), by the formula:

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

Where:

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 is the total number of questionnaires retrieved.¹

Another study of students' residence in Lagos, Nigeria in the year 2018, involved a questionnaire survey and semi-structured interviews with students and managers of students' hostels in the study area. The authors collected complimentary information from janitors, on the challenges encountered during cleaning, especially from the usage of the conveniences by the students. The researcher administered open-ended questionnaires to the target audience. The researcher also held a focus group discussion with some of the students who resided in the hostels, to elicit additional information, and validate the findings. The research used mean, mode, ranking and spearman correlation to analyze the data.⁴

In yet another study in south-west Nigeria, researchers obtained primary data for their study of students' hostels via the administration of questionnaire to students in selected hostels within the study area. The researchers, analysed data collected, using descriptive statistical analysis and the evaluation of relative satisfaction indices (RSI).

The authors examined users' housing satisfaction based on the interacting factors of the dwelling, the environment, and management components of student housing. Respondents indicated their satisfaction levels using a five-point Likert scale ranging from very dissatisfied (rated as 1) to very satisfied (rated as 5).

Subsequently, the researchers calculated the total weight values and the mean values for each factor considered an index of residential satisfaction. The authors pegged the threshold of satisfaction at three (3), so that any score less than three, was dissatisfied, and any score greater, was satisfied.¹⁰

Furthermore, in Ghana, a team of researchers employed the use of structured questionnaires, in their study of residential satisfaction among post-graduate students. The questionnaire assessed vital issues such as bedroom facilities, toilet and bathroom facilities, laundry facilities, kitchens, etc. The authors used convenience purposive sampling approach to interview seventy post-graduate students who resided in the hostels. The questionnaire required respondents to score on the Likert scale of 1 to 5 (where 1=Very dissatisfied and 5=Very satisfied) their degree of satisfaction with the facilities and services rendered in the hostels. The authors analysed data obtained by the Relative Satisfaction Index (RSI) viz.:

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

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 (which is 5 in this case). The overall satisfaction levels of the various facilities were ranked based on their Mean Aggregate RSI as obtained from the formula stated below:

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

Where $\sum RSI$ = Cumulative Relative Satisfaction Index for the facility and N = number of items being considered under each facility. The academics, borrowing from an earlier research, classified the various range of RSI values obtained as follows: 1-20 = Very dissatisfied; 21-40 = Dissatisfied; 41-60 = neither satisfied nor dissatisfied; 61-80 = Satisfied; 81-100 = Very satisfied.¹¹

Other tools employed in POE include: analysis of plan, indoor environment quality monitoring (IEQ) (e.g. indoor air quality (IAQ) and thermal performance). Investigation of users including walkthroughs, observation schedules and structured interviews with building's users are also apt for POE⁸.

Benefits of POE of students' residences:

Post-occupancy evaluation is profitable to both designers and building owners. The feedback it provides, guides decision making by various stakeholders in the built environment industry. The following are benefits of POE according to a publication by Oxford Institute for Sustainable Development:

1. reduction of future costs
2. reduction of environmental impact
3. maximization of value of property portfolios
4. reduction of future liability
5. minimization of maintenance costs
6. increases design know-how.⁷

POE is also a way of providing feedback over the course of a building's useful life from initial concept through to occupation. The information obtained from feedback could then serve for informing future projects. Information supplied by feedback from POE guides future projects both on the delivery process and technical performance of the building. Summarily, POE serves a number of purposes including:

Immediate benefits viz.:

1. Detecting and finding solutions to problems in buildings;
2. Response to user needs;
3. Improved space utilisation based on response from use;
4. Comprehending of implications of changes in budget cuts or working context on buildings;
5. Guided decision making

Medium term benefits namely:

1. Built-in capacity for building adaptation to growth or changes in the organisation;
2. Finding new uses for buildings;
3. Accountability for building performance by architects and others;

Lasting benefits such as:

1. Planned review;
2. Lasting enhancements in building performance;
3. Enhancement in design quality.¹²

Some recognized benefits of POE include: continued development, and an enhanced fit between occupants and building. Other benefits are enhanced comfort for POE users, and a reduction of energy consumption (Martin, 2001 in⁸). Hostel buildings, if not strictly monitored, use a lot of energy because of the activities of students. POE provides the management of the hostels with information regarding how to minimize energy consumption.

Pitfalls and challenges facing POE of students' accommodations:

Post-occupancy evaluation of students' residences is not without pitfalls. Barriers to POE comprise: disagreed and reliable indicators, potential liability of the owner, omission from present delivery expectation, and segregation from professional curriculums (Martin, 2001 in⁸). The POE process can also be wide ranging and time consuming⁸. This is especially true for hostel accommodations where survey would usually return data with varying views and tastes.

Cost is another challenge that faces POE of students' residences and POE as an activity in general. The matter of who pays for the POE is not easily arrived at. Whether the institution should pay to know how the architect should have done his job, or whether the student should pay to unearth information that could make his living and learning experience better, is tough to require. Another barrier that limits POE is the self-preservationist stance of various professionals. POE's approach is often critical. Because of this, professionals are unwilling to welcome other professionals to undertake a POE of their work. And since no particular profession has recognized monopoly over POE, few professionals welcome outsiders to evaluate their work. Time is also a factor that poses a dilemma in POE. There are no clear-cut answers to when a POE should be conducted on a building. Academics have written much on POE. However, it is pertinent to note that POE does not fall into the skill set of any particular field of study.⁵

This separateness robs POE of the supervision and promotion that a profession would otherwise provide.

III. Conclusion

Drawing from different authors, the research shows that POE could be a veritable tool for scoring building performance. At the core of POE is a desire to give occupants a better living experience and to obtain information that would guide future projects. POE's essence is also to measure the building's performance vis-à-vis initial design intent. The goal in POE of students' residences therefore, is to measure how the building satisfies the occupants in general, and how it supports his quest to acquire learning in particular. Researchers employ various tools in the evaluation of students' accommodations namely: observation schedules, questionnaires, interviews, focus group discussions, water and energy consumption monitoring, etc. Researchers commonly use descriptive statistics to analyse data from POE studies. Some researchers also use advanced functions and modelling to analyse and understand data from POEs.

POE benefits are numerous and varied, and accrue in the short-term, medium-term and long-term.

However POE of students' residences faces the same industry-unique challenges: the absence of POE 'specialists'; the problem of who ought to pay for the service and the question of when to conduct a POE. Furthermore, POE of hostel buildings present the unique problem of varied and different feedback from occupants. This is because POE by nature factors in occupants perception. A hostel building, therefore, with possibly scores of occupants with varying demographics, will present varied perceptions and preferences when evaluated during occupancy.

POE, undeniably, will make a difference in the quality of lives of campus dwellers if routinely carried out. This is because the feedback obtained would guide management decisions on administration of the hostel and future projects.

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