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Applied Research Article

Performance Evaluation Criteria for Nigerian Government Buildings (Case Study: Kwara State Secretariat Building)

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ABSTRACT: State secretariat buildings need improvement in performance, functional efficiency, ventilation, and daylighting. There is a need to conduct a post-occupation evaluation (POE) to investigate users' satisfaction with the building. This study examined the conditions of facilities provided in the building and the users' requirements to guide the secretariat building design. The study obtained data from both primary and secondary sources. Four buildings occupied by the Ministries of Works, Water Resources, Communication, and Energy, with sixty offices each, were randomly selected. Selected 105 buildings representing 10% of the staff in the buildings chosen were set for questionnaire administration. Data obtained were analyzed using frequency counts and percentages. The condition of facilities provided in the different spaces shows that the adequacy of the storage facility (CFI=2.71), natural daylighting in offices (CFI=2.87), environmental landscape (CF=2.84), and proximity to parking space (CFI=2.71) was in good condition. The result for Functional Performance in the Ministries of Water Resources (POEI=3.60) is the highest among all four ministries. For technical performance, the Ministries of Works and Water Resources were rated highest (POEI=3.46).

Similarly, for Behavioural Performance, the Ministry of Communication was rated highest (POEI=3.35). The POEI for each building shows that Ministries of Water Resources rated the highest (POEI=3.38) while Works rated the least (POEI=3.22). The study concluded that users are moderately satisfied with the building; however, there is a need to provide additional facilities, including elevators, stores, and parking spaces, to complement the existing ones.

Keywords: *Performance Criteria, Occupancy Evaluation, Secretariat Buildings, Design Guide.*

INTRODUCTION

A finished building should be able to augment its worth and offer shelter to its occupants (Okoye et al., 2020). Planned upkeep programs permit inhabitants to use and exploit the facilities as the provision of facilities supports business operations. Building services must suit users (Natasha et al., 2015). Post Occupancy Evaluation (POE) offers an assessment tool on the performance of a building after it is engaged to comprehend the collaboration process between the building and the user's needs and to propose ways of refining the environment needed to accommodate user needs, especially in a public building such as a state secretariat (Nkpite et al., 2019). The distinctive characteristic of POE is that it creates references based on users' understanding of the effects of subjected buildings on output and comfort (Preiser et al., 2015).

The secretariat of an organization is the section that accomplishes its central administrative obligations. The word is linked explicitly with governments and intergovernmental organizations such as the United Nations. In contrast, non-governmental organizations, such as the International Organization for Standardisation (2011), state that their administrative unit is their secretariat. It is the gathering of various ministries or departments of the government that work as a single unit with shared responsibility, as in the case of the Council of Ministers (IOS, 2011; Shadare, 2019).

A Secretariat building is a place where the administrative activities of a state government occur. It is also a building or office complex that houses several departments (Hindustan Times, 2011). Irrespective of the type of group and its roles, operational secretariats unite members and stakeholders to work together on shared goals. It also supports

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practical outcomes that realize goals and purposes, ensure clarity while checking confidentiality, consider staff members' time and needs, and deliver on time (Allen & Clarke Policy and Regulatory Specialists Ltd). In the design of a building such as a secretariat, the architect's work does not culminate after the owner occupies a new building for the very first time but must ensure that the building performs as envisioned and confirm that its users are pleased with the quality of the space (Praveen et al., 2015; Akinwamide, 2018). Post-occupancy evaluation allows architects to measure their work deeper and ensure that each diminutive aspect has their attention. Hence, evaluating one's performance over time is vital in all spheres of life as it promotes progress in future events (Zubairu, 1999; Nkpite et al., 2019).

POE is a tool that considers the actual usage of the built environment, users' views, and necessities. Preiser (1995) and Preiser (2002) defined post-occupancy evaluation as a logical method of evaluating buildings after they have been constructed and engaged for a specific length of time. In architecture, POE is a method of investigating how functional and comfortable a building is after users have inhabited it for a certain period (Olagunju et al., 2013). It helps the architect spot some hitches and inspires the refining of the design, which delivers a more functional design. It is one of the top methods for finding or recognizing problems and faults (Nawawi & Khalil, 2008). Architects rarely obtain valuable responses about the performance of finished buildings, except from pleased or displeased users. To further buttress this point, Ilesanmi (2010) and Edidiong (2019) also state that "Evaluation by the genuine users of a building is vital for refining design excellence," and Vischer (2002) and Rathnayake et al. (2020) also discover that POE is used by architects not only to define client or user fulfillment but also to discover building flaws that would help in solving both present and imminent problems as revealed from the building (Khalil et al., 2011). Against this background, this study evaluated the post-occupancy of spaces in the Kwara State secretariat building to provide insight into the present state of the spaces by its users and the effectiveness of the spaces in use toward the design of similar structures.

Public buildings such as state secretariat buildings have been identified as associated with flaws and weaknesses after being inhabited (Gurcharan & Jagdish, 2009; Olanipekun et al., 2017). Performance and functional efficiency, availability, accessibility, circulation and formation of spaces, air circulation, daylighting, workflows, security, and safety all involve accurate concern and treatment (Almeida et al., 2021). Hence, there is a need for a post-occupancy evaluation, accepted as a manifold device in answering the problems of public buildings and amenities management in public buildings such as state secretariats. From previous studies conducted on POE, very few studies have emphasized the socioeconomic characteristics of users, which affect their behavioral performance. One such study was carried out by Preiser et al. (1988) and Okolie & Shakantu (2012), which dealt with demographic information to perform POE using room number, building area, position, age, sex, and number of years in the agricultural sciences building at the South University of Kentucky (in a developed country). Therefore, this study examined the socioeconomic characteristics of the staff in the Kwara state secretariat, including gender, age, marital status, religion, ethnicity, level of education, and staff category or position in the secretariat building in Nigeria, a developing country.

In the scope of buildings, however, construction professionals, such as architects and engineers, hardly evaluate completed buildings or even obtain valuable responses about the performance of finished building developments (Gurcharan & Jagdish, 2009). To ensure that the building adequately fulfills the purpose for which it was designed, at all given points in time, the architect should carry out POE early enough mainly to ensure the users' or occupants' satisfaction (Olagunju et al., 2013; Hou et al., 2023). Experts on the post-occupancy evaluation of a secretariat building have conducted few or limited studies. Yu et al. (2017) focused on the post-occupancy evaluation of the effects of resident behavior on the indoor environment value in college buildings in Chongqing. Faris (2017) worked on the performance valuation of buildings through post-occupancy evaluation in Architecture and Software Engineering at Salahaddin University-Erbil, Iraq. In addition, Olagunju et al. (2013) focused on the maintenance of the federal secretariat complex in Minna, Niger State, using the post-occupancy evaluation method. None of the studies examined state government secretariat buildings or the type of facilities provided in the different spaces.

The research questions for this study are as follows: What are the socioeconomic characteristics of the users in the Kwara State secretariat building? What are the types and conditions of facilities provided in different spaces? Do the available facilities meet the user's needs? What is the level of performance of the building in satisfying the user's needs? Existing studies hardly associate users' perceptions with the performance of state government secretariat building (Yang, 2014; Oladoja, 2015; Faris, 2017). Therefore, this study attempts to develop a guide for administrative building designs that will please, offer, and meet users' needs and cravings. Architects' aim to design a secretariat building for the users is favorable if its users are satisfied with the overall building performance. The practical result of space utilization against expected performance and environmental consequences arising from the same is very crucial in administrative buildings such as state secretariat buildings. Thus, this study is necessary to help improve performance productivity concerning space utilization in a secretariat building. In addition, this study will assist professionals in determining whether or not the staff of the Kwara State secretariat are satisfied with the overall building performance. This study provides information that the architect can use to improve user satisfaction and refine the design, which will give birth to a more efficient, functional design and manage secretariat building more efficiently and effectively in future designs. This study focuses on a post-occupancy evaluation of the spaces provided in the recently made Kwara State Secretariat building by applying the three categories of building performance guides, functional, technical, and behavioral performance elements, in Ilorin, the state capital, to recommend a design guide.

Literature Review

Post-occupancy evaluation (POE), building assessment, building evaluation, building analysis, and buildings occupied define studies focusing on finished building developments (Ilesanmi, 2010). Preiser and Schramm (1998) broadened the range of building performance evaluation to incorporate aesthetics, users, and other factors with

practical and economic factors. Watt (2007) uses the word "Building pathology" to define the part of building evaluation concerned primarily with flaws and allied corrective action. Although Duffy (2008) recommends the presence of a terminological predicament, these concepts target finding how the completed building performs, defining probable nonconformists, errors, or oversights, and gathering facts for future programming and design exertions. However, Preiser and Vischer (2002) consider POE the most frequently used term for evaluating buildings in use.

Watson, 2003 defined POE as a systematic evaluation of views on buildings from those who use them. Khalil, 2011 also describes it as a systematic way of collecting data assortment and facts on a building. On the other hand, it is also a device for connecting responses to newly built buildings with pre-design policymaking. The objective is to advance public building design, construction, and supply. Indication from POE activities shows that objectives such as discovering how buildings work once built and whether the rules on which the architect created design, construction, and cost conclusions are defensible (Parag & Shivani, 2019). The British Council for Offices (BCO) recapitulates that a POE offers a response of how effective the workplace is in supporting the inhabiting organization and the requirements of different end-users. The BCO also recommends that POE be used to check if a project brief has met the user's needs. POE is used to measure the evidence-based design procedure, where the project usually denotes a building design fit-out or revamp, or to modernize the project brief, where the project is the start of a new inventiveness, scheme, or procedure (Oseland, 2007). Using inhabitants as a yardstick in assessment, POE offers a considerable possibility for refining the performance of a structure. POE was to plug the breach into the conventional building process, which involves scheduling the program design, construction, and building use. It signifies the vital analytical pace desirable to feed the prescriptive tools of scheduling and programming (Van der Voordt & VanWegen, 2005). POE is a methodical way of assessing structures after they have been constructed and engaged for some time (Preiser, 1995; 2002). The break between the actual performance of structures and specified performance standards establishes the assessment (Preiser et al., 1988). POE is about procedures for defining whether the architect's proposed conclusions provide the result users need. Using dwellers as a yardstick in assessment offers a considerable possibility for refining the performance of a building (Faris, 2017). POE is in all construction segments, particularly healthcare, education, offices, commercial, and housing, in which poor structure performance will disturb the cost of running, dweller well-being, and business productivity (Lawrence, 2012). Nevertheless, despite the large number of studies in the framework of building performance, POE is an organized technique of gathering facts on buildings in use and its users' insight, which has not discovered extensive practice for public buildings and amenities such as the Kwara State secretariat, hence the need for this study.

Past studies such as Nkpite et al. (2019) described POE as a well-entrenched building performance technique that offers a satisfactory balance between functionality and aesthetics of the building. Nkpite et al. (2019) studied POE to measure the performance of public school buildings in Nigeria and how its use adds to building functionality. Edidiong (2019) examined POE as a sustainable instrument for evaluating building performance in developing nations. According to the study, building occupiers are an essential source of information on building performance. The study highlighted that POE approaches and methods should be simple, and the building typology should be precise. The study confirmed that POEs might make valuable benchmarking data available that the architects could use to establish best practices for providing sustainable building improvements in Nigeria. The outcome of the POE study will inspire Policymakers to deliberate on regulations that could enhance the use of POEs for building performance evaluations to advance the design of future and current building improvements.

Akinwamide (2018) examined users' performance evaluation of facility management practices in the Akure, Ondo State federal secretariat complex. The study acknowledged the variables essential for optimal performance of facilities management practice and facility delivery into four elements: effective service delivery, user satisfaction and cost avoidance, commitment, learning and feedback, and communication and teamwork. Christine et al. (2019) thoroughly appraised Building Performance Evaluation benchmarks (BPE) from a systematic review of the existing literature, which concentrated on the quality control of buildings, which is a database to present the most used BPE benchmarks. Gupta et al. (2019) adopted a performance evaluation method for Indian green buildings. This study investigates how to improve and evaluate a customized building performance evaluation (BPE) method based on the Indian context. Khalil et al. (2011) studied the performance evaluation of indoor environments to achieve sustainability for advanced educational buildings. This study measured the occupiers' probability of learning process and satisfaction levels selected by the study because of poor environmental situations, based on investigative research on the process and concept of POE. Almeida et al. (2021) studied the method and approach for estimating water consumption patterns and energy in university buildings using a Federal University of Roraim case study. The study reiterated that energy and water consumption patterns outline and set the starting point for understanding the factors and evaluating the performance of likely measures to increase reliability and efficiency. Olanipekun et al. (2017) studied an interrelated building performance index for assessing office buildings in Nigeria. This study established an index for appraising the general performance of office buildings. The study determined that security and safety were the most critical performance variables, followed by indoor air quality and building integrity. Others include thermal, spatial, visual, and acoustic performance.

Okolie and Shakantu (2012) evaluated educational building performance perceptions and practices using the case of federal universities in southeast Nigeria. This study assessed the level of consciousness, practice, and perception of building performance evaluation in the running of educational buildings. This study highlights the necessity for facilities managers, architects, engineers, and designers to acquire skills, knowledge, and understanding of critical and significant aspects and characteristics of building performance evaluation to meet and overcome the rising demand for higher and advanced quality education. Hou et al. (2023) evaluated student housing apartment performance using fuzzy comprehensive evaluation (FCE) and unified analytical hierarchy process (AHP)

methods. In this study, an inhabitant-oriented performance evaluation outline was developed by Hou et al. (2023), a survey grounded on a student housing apartment complex in the Netherlands from literature analysis, expert consultations, and interviews. In addition, a focus group discussion with student resident congresses and representatives was conducted by Hou et al. (2023) in the study. This groundbreaking framework, which encompasses three stages of building performance features, splits the building services and architectural design performance features into two main categories. The results show that building service performance features were rated less significant to the students' residents than architectural design physical characteristics. Student residents observed importance weightings for several building performance features, which Hou et al. (2023) studied compared by the length of stay, gender, and educational level.

Oladoja (2015) assessed the performance of primary health care (PHC) buildings in the federal capital territory. The study reiterated that studies have acknowledged that the physical attributes of buildings have an essential effect on occupant satisfaction. Ten factors, categorized into three classes: building quality, functionality, and impact, were identified as the compulsory criteria for healthcare building performance. Okoye et al. (2020) studied the severity of the effects of loud music sounds on the sustainability performance of buildings across three main cities in Anambra State, Nigeria. This study established that loud music sounds severely affect the sustainability performance of buildings technically, environmentally, socially, and economically. Shadare (2019) studied a total performance evaluation of selected buildings within the Federal College of Education, Akinmorin, Oyo State. The study reiterated that designers, architects, structural engineers, planners, and other experts and professionals related to and involved in building production over the years have spawned and generated chains of debates and controversies in the construction, planning, design, use, and maintenance of buildings and their environs and the level of satisfaction they offer. The study restated that a contented and comfortable indoor environment is significant in building occupants' safety, productivity, happiness, privacy, quality of life, and satisfaction. Therefore, on completion, a building must perform its functions to ensure anticipated satisfaction for its occupants (Parag & Shivani, 2019). Thus, the design and execution of building construction are considered carefully by the architect. The study noted that when a building is not suitable for the environmental conditions at the beginning, it may be problematic for such a building to meet the required standard and comfort for the ultimate productivity of its dwellers. The significance of understanding the overall performance of a building in an all-inclusive sense is unquestionable. For instance, building evaluation is a priority because it is vital to be acquainted with the current situation of the building before one can efficiently expect impending building performance.

The concept of total building performance (TBP) and overall performance began in the most recent decades of the 20th century. It provides a tool for evaluating the quality of a building in terms of the level to which all the necessities and requirements of building performance are fulfilled satisfactorily (Nkpite et al., 2019). For buildings to satisfy their occupiers, their process, planning, design, construction production, and management are on specifications recognized by governments and statutory standards and the engagement of professionals and experts in the execution of construction. These professionals have adequate information about users' tastes, expectations, and needs. According to Edidiong (2019) and Akinwamide (2018), studies have revealed that these specifications and standards occasionally need to conform to the transformation. Rathnayake et al. (2020) reiterated that the essence and significance of buildings in a stormy environment are the effectiveness and efficiency of the occupiers' comfort and performance in a building. In this regard, a re-investigation of occupant comfort and building performance can offer motivation for thinking outside the box of the overall occupant requirements to pursue a better quality of life. The study stated that user satisfaction in a building is through the contribution, involvement, and sophisticated interaction of total building performance mandates. Furthermore, the study acknowledged accurate building performance mandate indicators regarding diagnostic measures and potential health effects.

Vischer (2002) recognized four distinct forms of POE and explained each with an instance study. These are building behavior studies,

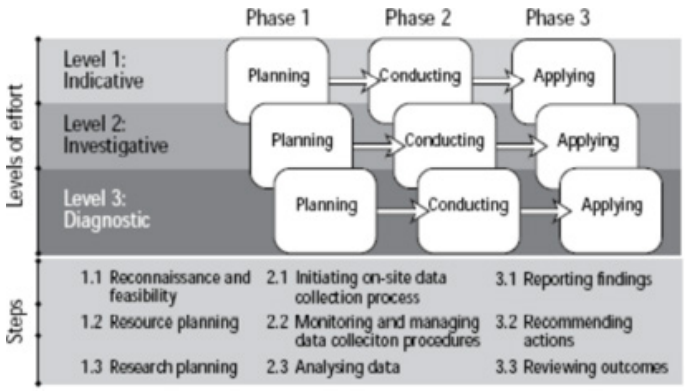

Fig. 1: Post-occupancy evaluation process model (Source: Preiser, 1995)

gathering knowledge and facts for pre-design programming for buildings for which design guides or samples may be valuable, and strategic space planning. Building valuation as part of workstation modification that brings space uses more in line with intentional occupational objectives and investment asset management, where POE is a device for developing a performance yardstick for constructed space. Considering several approaches to conducting POE, Preiser (1995) established a procedure model, as shown in Figure 1. The model symbolizes the three phases and nine steps of the POE process.

Purpose and Benefits of POE

The short-term benefits of POE include the discovery of and answers to anomalies and glitches in facilities, practical facility administration that is open to user values, better-quality space use, and response to building performance. In addition, it will improve the behavior of building occupants over dynamic contributions of the evaluation procedure (Vischer, 2002). Furthermore, it enhances consideration of the performance effects of changes dictated by budget cuts, better-informed design decision-making, and understanding of design costs (Preiser & Schramm, 2012; Makinde, 2020a). Some of the medium-term profits include the following: built-in capacity for facility adaptation to administrative variation and development over time, as well as reusing facilities into new uses; essential cost savings in the building procedure and all over the life cycle of a building; and responsibility for building performance by design experts and owners. Long-term profits include the following: long-term developments in building performance, improvement of design records, and attainment of building standards, measures, and guidance literature. In addition, it enhances the quantity of building performance over quantification (Makinde, 2016).

A further significant advantage of a POE is its progressive impact on delivering caring and suitable atmospheres for people through enhancements in the programming and development of buildings. POE is a product study method that supports designers in improving a healthier design to maintain the varying desires of individuals and organizations alike. POE also offers the means to observe and sustain a good fit between facilities, organizations, and the people and activities they support. POE is an essential component of a proactive facility management program. Among the benefits of POE is identifying effective design types that can be analyzed repeatedly. These include finding glitches to ease or lessen building and facility flaws, enhancement of building performance and environment, discovering redundant and needless building features, and enabling users to convert building problems and reduce maintenance work and cost (Bordass et al., 2010; Vischer, 2002; Watson, 2003). POE delivers a mechanism for considering the shared contact among buildings and users' ambitions and refining the environment to accommodate these goals (Vischer, 2002; Ilesanmi, 2010).

User Satisfaction as a Benchmark for Performance Evaluation

The aspect of the user and inhabitant is vital in the overall evaluation procedure. Building performance, according to Mamalougka, 2013 is not restricted to energy preservation, lifecycle costing, or the functionality of buildings. There is also a need to focus (which already does) on users' viewpoints on buildings and examine the connection between the building and the user (Mamalougka, 2013). As a consultant, the architect should know glitches and their bases, and factors that affect the level of Fulfillment should be determined. The most vital feature of a building's accomplishment in meeting its design purposes is the level of user gratification (Wilkinson et al., 2011). Gratification studies intersect extensive varieties of disciplines in the management and social sciences and the built environment (Ibem et al., 2013). In broad-spectrum, gratification is a personal assessment of the performance of goods or services in meeting the needs and anticipations of users or clients (Parker & Mathews, 2001; Ueltschy et al., 2007; Hanif et al., 2010). In their study, Hanif et al. (2010) liken the profits or values that users or clients obtain to those anticipated after they use a product or service. In sum, satisfaction or gratification is a measure of the change between the actual and expectable performance of products or services in meeting users' desires and projections from the users' or consumers' viewpoints during or after consumption involvement. Based on the expectancy-disconfirmation principle, from which several studies on satisfaction or gratification draw, if the performance of a product or service encounters users' or clients' needs and prospects, the user or client is said to be pleased with the product or services, and vise versa (Oliver,1981; Parker & Mathews, 2001).

POE Categories Based on Building Performance Elements

Scholars can distinguish the emphasis of a POE in terms of three extensive types of performance elements. These categories include functional, technical, and behavioral performance elements (Barlex et al., 2006). These performance elements entail performance pointers symbolizing signs, markers, attributes, and items that assess the precise qualities of an element to be measured. According to Sanni-Anibire et al., 2016, performance pointer alteration relied on the evaluation drive and the situation study (Kim et al., 2005; Sanni-Anibire et al., 2016). Functional performance discourses feature' functionality and productivity levels in secretariat buildings and facilities. The available performance elements comprise approachability, spatial size for activities, and sufficiency of essential services. Other necessary services include telecommunications, openness to modification over time, and competence in communication and flow. These elements are directly linked to the activities inside a building and are necessary to conform to the precise requirements of the inhabitants. Technical performance elements include endurance qualities such as arrangement, fire safety, cleanliness, security, air circulation, and well-being (Preiser et al., 1988). From an environmental viewpoint, technical performance discourses indoor environmental quality (IEQ), which affects inhabitants' ease, well-being, and efficiency (Choi et al., 2012). Behavioral performance elements generate a connection between the occupant's activities and their physical surroundings. Distinctive behavioral performance matters comprise the effect of area, size, and the number of individuals that share it upon a building's occupant and the result of the functional span between spaces upon the regularity of use (Makinde, 2020a). In addition, occupants' well-being,

which is affected by the flow pattern and means of social relations, are the features that affect the building's appearance and view (Sanni-Anibire et al., 2016).

POE Performance Indicators

One of the POE performance indicators is design quality; this comprises the worth of all architectural characteristics of the building, such as the design and pattern of space, building setting comparative to other facilities in the secretariat, landscape architecture, and generally attractive look (Sanni-Anibire & Hassanain, 2016). Secondly, building layout is the arrangement of space, equipment, and storage, which agrees with suitable flow and approachability to several working spaces inside buildings that are the most significant user satisfaction. Furthermore, spatial characteristics, order, location, relationships, form, size, and features of spaces affect occupant actions (Preiser et al., 1988). The internal plan of the building must be well organized in terms of the organization of rooms on each level of the building, the width of the passageways for movement, and the position and number of stairways (Hassanain, 2008; Sanni- Anibire & Hassanain, 2016). In addition, the interior and exterior appearance is a significant performance indicator. Appearance is one of the most important features of building performance. It relates to the occupiers' beautiful opinion of the building (Preiser et al., 1988). Common problems arising and affecting the external walls are color diminishing, wetness and wind permeation, spilling, collapsing, delamination, cracking, cleanability, and wear (Makinde, 2020a). The construction features and choice of building materials should be well-matched with and complement the present physical environment (Hassanain, 2008; Sanni-Anibire & Hassanain, 2016). Furthermore, access to facilities in the secretariat is also critical; this is a POE performance indicator, which denotes the building's proximity to the facilities. The position of a building and its proximity to places of importance are critical factors in the gratification of its occupants (Hassanain, 2008; Fatoye & Odusami, 2009; Sanni-Anibire & Hassanain, 2016). Indoor air quality (IAQ) is also significant. IAQ is the value of air inside a facility or the assembled environment. Anderson et al. (2014) defined IAQ as "the contented choice of the temperature, moistness, airing, and chemical or organic pollutants of the air within a building." The key anxiety factor is interior air pollution, which can be the root of asthma, dislikes, and frustration. Two of the most feared consequences of poor IAQ are sick-building syndrome (SBS) and building-associated infections (BRI) (Sanni-Anibire et al., 2016; Sanni-Anibire & Hassanain, 2016). Last but not least is visual comfort, a vital human necessity affecting task performance, health and security, disposition, and atmosphere (Illuminating et al. of North America, 2000). The design of buildings should produce an equilibrium between non-natural and natural daylighting, whereby the architect permits adequate natural light into a building through clear parts of the building cover (Hassanain, 2008; Sanni-Anibire & Hassanain, 2016).

POE Stages of Review

POEs address several inquiries, such as knowing whether or not the building does as envisioned, transforming the user's needs, and identifying problems that need to be addressed swiftly by the consultant, the procedure's efficiency from beginning to end, and what is learned by an architect from upcoming developments. Nevertheless, only some of these matters are used and undertaken by experts instantly on delivery; some could take numerous months to institute. Various approaches are adapted to gather this information from questionnaires, focus groups, or data checking. The three elucidated phases or stages of the review process as a guide include the operational review stage, which is performed 3 - 6 months after occupation; the project review stage, which is conducted 12–18 months after occupation; and the strategic review stage, which is performed 3–5 years after occupation (Barlex & Gilby, 2006). When the users get to know the building after two or three months of occupation, ask them in an operational review about its health and whether any prompt problem(s) need a solution. The following feedback stage, the project review, would be conducted after a minimum of a year of occupation when the building's structures are stable, and there has been a complete seasonal cycle. This study offers the chance to observe how the building performs under various conditions. It also lets users detect where the building does not conform to their long-term needs. The third POE stage (the strategic review) would occur several years after early occupation when the administrative requirement may have transformed the building. When architects assess POE after a building's development, people often overlook why they made some critical decisions (Barlex & Gilby, 2006). This study employed a project review process in the recently built Kwara state secretariat building (the study area), occupied for over 18 months and not up to 3 years since the state governor commissioned the building in 2020.

MATERIALS AND METHODS

The quantitative research design method used cross-sectional research instruments, which included a structured questionnaire and an investigative POE with a project review process for evaluation. The study used primary and secondary data.

The Study Area

Kwara State is situated in the north-central part of Nigeria on coordinates 8o30'N 5o00'E, with a total area of 36,825 km2 (14,218m2), as shown in Figure 2. Benin confines it to the west, Niger to the north, Kogi to the east, and Ekiti, Osun, and Oyo to the south. It typically comprises a wooded savannah, but the south has forested areas. Virtually all of its savannah areas were subjugated by the Fulani in the early 19th century, and the region remained part of the superior Fulani Empire until the forces of Sir George Goldie's Royal Niger Company conquered the emirs of Nupe and Ilorin in 1897. United into the Protectorate of Northern Nigeria in 1900, the combined Colony and Protectorate of Nigeria in 1914, and the Northern Region in 1954. Kwara State was created in 1967 when the Federal military government divided Nigeria into 12 new states. After forming 19 states In 1976, Benue lost the Nigerhttps://www.britannica.com/place/Benue, the three Igala divisions east of the River. In 1991, it lost some of its territory in the northwest to Niger State and some of its territory in the southeast to the newly created Kogi State (McKenna, 2021). Each local government area is governed by a chairman, as stated in the state's constitution. Ilorin, the state capital and largest town, is an industrial

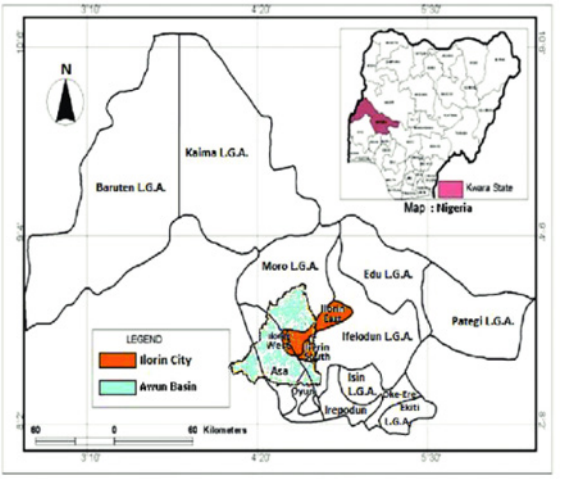

Fig. 2: Ilorin in Kwara

Fig. 3: Location of the study area

and educational center. The state also has a good network of local roads, with 14,218 square miles (36,825 square km) and a population of 2,371,089 based on the 2006 national census.

Location of the Study Area in Ilorin

As shown in Figure 3, the study area is a recently built Kwara State secretariat building located in a Government Reserved Area (GRA), High Court Road, Ahmadu Bello Way, Ilorin, Kwara State, Nigeria.

The sample frame used for the study consists of four (4) buildings with 240 offices (60 Offices in each building) in the most recently built Kwara State secretariat building, which was commissioned in 2019 but officially occupied in January 2020. Each building has three floors (ground, first and second floor) with 20 offices. The selected building accommodates 1,051 users from the reconnaissance survey conducted earlier. Applying Sloven's formula n= N/1+Ne2 (Kanire, 2013) to regulate the minimum number of respondents to consider the study statistically valid, the effective population size (N) is 1,051. The sample error (e) considered was 0.1, representing a 91% confidence that the sample size correctly represents the population. Therefore, 1051/1 + (1051)0.12 =91%.

Method of Data Collection

The study used a multistage sampling technique. First, the study encompasses observing all the different office spaces in the study area, where a reconnaissance survey shows 240 offices in all. Each building has three stair halls connecting the floors, as shown in Figure 4.

In the second stage, 105 offices were selected for the study using a random sampling technique and questionnaires by the administrator, administered to the most senior staff in a designated office (where there is more than one staff occupying an office). The respondents were required to rate the adequacy level of building facilities and POE based on a five-point Likert scale of "5" (Excellent), "4" (Very good) "3" (good) "2" (Fair), and "1" (Poor) to show their opinion on the specified variable. The administrator administered 1051 (10%) questionnaires to

Fig 4: Typical Ground Floor Plan of the Phase I Secretariat

the respondents. The study randomly selected each office to determine where the administrator administered the questionnaires.

Method of Data Analysis

The study obtained data from the Kwara State Secretariat building staff through questionnaires. To further explore the user's perception and apply the same method as that used in one of the studies by Makinde (2022), the study used two approaches; the first was to acquire frequencies of the different categories, and the second was to develop a condition of facility index (CFI) and post-occupation evaluation index (POEI) to gain a better understanding of the user's perception of the available facilities and the functional, technical, and behavioral performance elements of the selected spaces in the study area. In the first approach, Likert's ratings of 'Poor, 'Fair,' 'Good,' 'Very Good,' and 'Excellent' are assigned to a value of 1, 2, 3, 4, and 5, respectively, to measure the user's perception of the availability and physical condition of the facilities and POE of the building. This range is then categorized using the mean calibration recommended by Hassanain (2008) and fine-tuned to suit the Likert scale used. The mean results are validated as follows: if the mean response is below 1.49, this indicates that variables are "Poor"; if the mean response is between 1.50 and 2.49, this indicates that variables are "Fair" if the mean response is between 2.50 and 3.49, this indicates that variables are "Good." If the mean response is between 3.50 and 4.49, the variables are "Very good"; if the mean response is above 4.50, the variables are "Excellent".

In the second approach, the respondent's perception of the condition of facility index (CFI) and post-occupancy evaluation index (POEI) by calculating the total weight value (TWV) for each question; from the summation of the product of the number of responses to each rating of a question and the respective weight values; mathematically expressed as

$$TWV = \sum_{i=1}^{n} NiPi$$

If Ni=14, Pi=5 $TWV = \sum_{i=1}^{n} 14X5$

$= 70$

$$TWV = \sum_{i=1}^{n} 70 + 36 + 12 + 6 + 1$$

$TWV = \sum_{i=1}^{n} NiPi$ ..... (Equation 1)

where TWV is the total weight value of each question, Ni is the number of respondents choosing a particular rating i, and Pi is the weight assigned to rating 1.

The CFI or POEI for each question is determined by dividing the TWV by the summation of the respondents to each of the five questions ratings;

expressed as follows:

$CFI = \sum_{i=1}^{n} TWV/Ni$ ---------- (Equation 2)

Or

$POEI = \sum_{i=1}^{n} TWV/Ni$ ---------- (Equation 3)

where CFI is the condition of the facility index; TWV = total weight value; Ni = number of rated attributes; POEI = post-occupation evaluation index.

Table 1: Calculation of the TWV, CFI, and POEI

S/N	Study Area	Type of Facilities	Scale							
			5	4	3	2	1	N	TWV	TWV/N
			Freq.	Freq.	Freq.	Freq.	Freq.			
1	Building X	A	70	36	12	6	1	31	125	4.03
2		B	55	32	24	6	1	31	118	3.81
3		C	40	36	24	12	0	31	112	3.61
Average										11.45/3
Mean Deviation										3.816

For instance, in Table 1, examine Facility 'A' and apply the equation (1) formula

TWV=125 for Facility A

For the condition of the facility index (CFI), applying equation (2)

$CFI = \sum_{i=1}^{n} TWV/Ni$

$CFI = \sum_{i=1}^{n} TWV/Ni$, where Ni = 3 (Total Number of Facility examined in Building X)

If TWV/N =4.03+3.81+3.61 and N=3, then $\sum_{i=1}^{n} TWV/N$

$= \sum_{i=1}^{n} 11.45/3$

CFI for Building X = 3.81.

The same method is applicable for calculating POEI by substituting CFI for POEI, as shown in equation (3) above.

RESULTS AND DISCUSSIONS

This section presents findings on users' perceptions and satisfaction with the available facilities in the Kwara State Secretariat building. Table 2 shows that of the 105 administered questionnaires, 91 were retrieved from respondents and considered valid for this assessment, with an 85% response rate. Meanwhile, the remaining 14 questionnaires were not retrievable to indicate non-respondents. Similarly, the total number of questionnaires distributed in the Ministry of Communication was retrieved to show 100%, whereas others had 84%, 94%, and 62% for the Ministries of Works, Water Resources, and Energy, respectively. The study administered a total of 105 questionnaires.

Socioeconomic Characteristics of Respondents

It was imperative to ask about the socioeconomic characteristics of the respondents to determine whether the survey reached the right target audience and whether the study effectively gathered the necessary information. The results show that respondents in the study area comprised 53% males and 42% females. According to Makinde (2020a), gender is one of the demographic or socioeconomic factors believed to influence the level of user satisfaction when conducting POE of a building. Therefore, differences in gender type can also result in different attitudes toward space. The results show that respondents between the ages of 30 and 39 have the highest percentage of 43 (which is also very evident in all the Ministries), indicating that they are mature enough to understand their working environment and provide vital and acceptable information.

The result also shows that most respondents are married (83%), while the singles and widows/widowers are 14% and 3%, respectively. The result indicates that more respondents are Muslims, necessitating a mosque as one of the facilities needed around the working environment to complement other facilities in the study area. The results on the ethnicity of respondents show that 91% are from the Yoruba ethnic group, while the Hausa had none, and Igbo had only 1%. Other ethnic groups make up 8% of the total respondents. This piece of information shows that bringing customized evidence to bear in design and consideration of the necessities, wishes, character, and organizational culture of a specific client and their workforce, instead of a universal way out based on what others have found for other groups, is an excellent strength for the creation of well-used future workplace atmospheres.

The result on the level of education of respondents indicated that those with HND/first degree are more with 68% and a frequency of 62, which shows that they have more understanding on how to relate with their space appropriately and understand the questionnaire better by providing the correct response on each question based on their different opinion or perception. The result shows that the senior staff constitutes 61% of the respondents, while 33% comprise the junior staff. The result shows that 49% of the respondents have been in service for 1–5 years, which, in essence, has helped to gather vital information concerning the study area. Nevertheless, those who have been in service for 26 to 35 years have also contributed to the needed information in the study area, especially from their experience relating to the work environment and the available facilities. The results show that 68% of respondents spend more than 8 hours in their offices. This information indicates that the respondents had a close relationship with the working environment. This result suggests that the socioeconomic characteristics of staff occupying the spaces have a tremendous behavioral influence or impact on the post-occupancy of the spaces in the Kwara state secretariat building because of the strong relationship between them.

Types and Conditions of Facilities Provided in Different Spaces

As observed from a reconnaissance survey conducted earlier in the study area and while assessing the fieldwork, the types of facilities provided in the different spaces included toilet, storage, passage, stairs,

Table 2: Distribution of administered and retrieved questionnaires in the study area.

S/N	Study Area	Number of Questionnaires Administered	No. of Questionnaires Retrieved	% of Questionnaires Retrieved
1	Ministry of Works	37	31	84
2	Ministry of Water Resources	17	17	94
3	Ministry of Communication	30	30	100
4	Ministry of Energy	21	13	62
	TOTAL	105	91	85%

Table 3: Respondents' views on the conditions of facilities provided by each of the Ministries

S/N	Study Area	Type of Facilities	Scale							
			5	4	3	2	1	N	TWV	TWV/N
			Freq.	Freq.	Freq.	Freq.	Freq.			
1	Ministry of Works	Corridor	70	36	12	6	1	31	125	4.03
2		Stairs	55	32	24	6	1	31	118	3.81
3		Toilet	40	36	24	12	0	31	112	3.61
4		Walkways	20	48	33	6	1	31	108	3.48
5		Storage	30	28	39	8	1	31	106	3.42
6		Landscape element	25	44	18	14	2	31	103	3.32
7		Parking spaces	25	32	12	16	6	31	91	2.93
	Average									24.6/7
	Mean Deviation									3.514
1	Ministry of Water Resources	Corridor	35	16	12	4	0	17	67	3.94
2		Toilet	25	28	9	4	0	17	66	3.88
3		Stairs	30	16	15	4	0	17	65	3.82
4		Storage	15	24	21	2	0	17	62	3.65
5		Walkways	15	28	9	6	1	17	59	3.47
6		Parking spaces	15	16	9	10	2	17	52	3.05
7		Landscape elements	0	7	3	4	3	17	48	2.82
	Average									24.63/7
	Mean Deviation									3.518
1	Ministry of Communication	Walkways	40	36	33	10	0	30	119	3.97
2		Corridor	40	28	42	2	0	30	112	3.73
3		Stairs	40	28	30	10	0	30	108	3.6
4		Toilet	15	60	24	4	2	30	105	3.5
5		Storage	20	32	36	12	0	30	100	3.33
6		Landscape elements	5	28	48	12	0	30	93	3.1
7		Parking spaces	10	12	51	16	0	30	89	2.97
	Average									24.2/7
	Mean Deviation									3.457
1	Ministry of Energy	Toilet	20	20	12	0	0	13	52	4.0
2		Landscape elements	10	12	27	0	0	13	49	3.77
3		Storage	15	12	12	6	0	13	45	3.46
4		Stairs	5	16	21	2	0	13	44	3.38
5		Parking spaces	5	16	21	2	0	13	44	3.38
6		Corridor	5	16	18	4	0	13	43	3.31
7		Walkways	5	20	12	4	1	13	42	3.23
	Average									24.53/7
	Mean Deviation									3.504

parking space, walkway, and landscape elements (such as trees, shrubs, curbs among others). Table 3 shows the results on the condition of facilities obtained from respondents in the study area.

The study used a Likert scale of 5 – 1 to measure the condition of facilities based on the respondents' opinions, where 5 = Excellent, 4 = very good, 3 = good, 2 = Fair, and 1 = poor. *N is the number of questionnaires retrieved, as shown in Table 3. At the same time, the study carried out a summation for each variable under the Likert scale, from frequency by multiplying the number of respondents for a variable by its scale value. For example, Toilet at the Ministry of Works has eight respondents who were satisfied with the facility, giving it an excellent option. Multiplying this option with the Likert scale value for excellent, which is 5, we obtain 40. Similarly, a variable's total weight value (TWV) is the summation of all frequencies for a specific variable multiplied by the scale value for each. TWV/N = average. The mean deviation for a study area is the average/total number of variables used, which is the condition of facility index (CFI). From the results in Table 3, the CFIs for the Ministry of Works, Ministry of Water Resources, and Ministry of Energy are 3.514, 3.518, and 3.504, respectively. These results reveal that the facilities provided are " excellent " when placed on the Likert scale. In contrast, the facilities in the Ministry of Communication are in a "good" state with a CFI of 3.457. The average mean of 3.514 + 3.518+ 3.504 + 3.457 divided by 4 is 3.498. The results obtained imply that these facilities are directly linked to the activities inside the building and are necessary to conform to the precise needs of the occupants (Preiser et al., 1988), which affects staff productivity. Figure 5 graphically illustrates the respondents' views on the condition of facilities in the study area.

Users' needs in terms of facilities needed to improve the spaces within and around the secretariat building.

The study used an open-ended questionnaire to gather information on the facilities needed to improve the spaces within and around the secretariat building. Seventy-five percent of the total respondents indicated that the required facilities that can improve the spaces include the use of an elevator for easy access to upper floor levels, additional storage facilities, parking space, an alternative source of electricity supply (Industrial generator), incinerator technical, and food canteen, among others.

Post-Occupancy Evaluation of Secretariat Buildings

Performance Criteria on Functional Performance (FP), Technical Performance (TP), and Behavioural Performance (BP) in the Ministry of Works

Table 4 shows the results of the respondents' opinions on the performance criteria in the Ministry of Works. The results reveal that the adequacy of storage space (2.71), adequacy of natural daylighting in the office (2.87), and environmental landscape elements (2.84) are all under FP. Prevention against impact-generated noise with 2.93 (under TP) and proximity to car parking space with 2.71 (under BP) all fall between a mean deviation of 2.50–3.49 and can be said to be "Good" while adequacy of car parking space (2.35) falls between 1.50–2.49, which is "Fair," thereby requires kin attention for improvement in the design of its phase II. Table 4 also reveals the results of the Ministry of Water Resources' performance criteria. The results show that the adequacy of space within the office had the highest mean of 4.29 and was rated "excellent." In contrast, the environmental landscape element had the lowest mean of 3.05, rated "Good." The result of proximity to car parking space with a mean of 3.11 must also be appropriately considered and improved upon in the design of the secretariat phase II.

Table 4 shows the functional, technical, and behavioral performance criteria in the Ministry of Communication. The result shows that all the variables have a mean above 3.0 except aesthetic appeal with 2.9 and proximity to car parking space with 2.8, rated "Good." The result shows that consideration needs to be given by the architect to the aesthetics and location of the office about car parking spaces in the design of the secretariat phase II. The results also show the performance criteria of

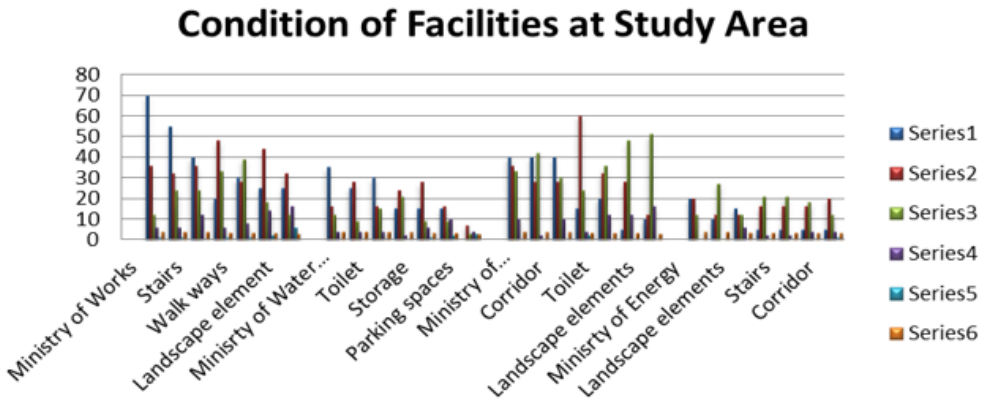

Fig. 5: Respondents' views on the condition of the facilities in the study area.

the Ministry of Energy. The result from prevention against direct glare from the sun through openings has the highest mean of 4.0 and is rated "excellent." The proximity of offices within the ministry building has the lowest mean of 3.0 and is rated "Good." All the results indicate that the variable has a mean above 3.0, which could be due to the proper orientation of the building to other facilities and the proximity of these facilities to the building. In summary, from the results obtained on the field, the respondents from the Ministry of Water Resources and Communication could be affected by the poor orientation of the building considering the location of the sunrise and sunset direction, while those in the Ministry of Works and Energy enjoy more of the weather at work due to the proper orientation of the building (the

Table 4: Performance criteria for functional, technical, and behavioral performance in the study area.

S/N	PC	Variables	Ministry of Works		Ministry of Water Resources		Ministry of Communication		Ministry of Energy	
			TWN	TWV/N	TWN	TWV/N	TWN	TWV/N	TWN	TWV/N
1	FP	Ceiling height from the floor	127	4.09	73	4.29	113	3.76	104	3.84
2		Adequacy of space within the office	104	3.35	73	4.29	108	3.6	49	3.76
3		Adequacy of car parking space	103	3.32	67	3.94	102	3.4	48	3.69
4		Pedestrians walkway	101	3.26	62	3.64	102	3.4	45	3.46
5		Adequacy of natural day-lighting in the office	100	3.22	61	3.58	100	3.33	45	3.46
6		Views outside the office	98	3.16	59	3.47	99	3.3	44	3.38
7		Adequacy of the storage space provided	89	2.87	57	3.35	95	3.16	41	3.15
8		Environmental landscape elements	88	2.84	56	3.29	92	3.06	40	3.07
9		Visual privacy	94	2.71	54	3.17	91	3.03	40	3.07
10		Aesthetic appeal	73	2.35	52	3.05	87	2.9	40	3.07
Average				31.17/10		36.07/10		32.94/10		33.95/10
Mean Deviation				3.11		3.60		3.29		3.39
11	TP	Floor finishes	128	4.13	60	3.52	107	3.56	52	4.0
12		Ceiling finishes	118	3.8	61	3.58	107	3.56	43	3.3
13		Natural lighting of the internal space	116	3.74	59	3.47	107	3.56	43	3.3
14		Artificial lighting of the internal space	114	3.68	58	3.41	103	3.43	43	3.3
15		External wall finishes	109	3.51	58	3.41	101	3.36	42	3.23
16		Prevention of direct glare from the sun through the openings	98	3.16	58	3.41	101	3.36	41	3.15
17		Internal wall finishes	97	3.12	57	3.35	100	3.33	41	3.15
18		Prevention of impact-generated noise	91	2.93	56	3.29	97	3.23	46	3.15
Average				27.71/8		27.44/8		27.39/8		26.96/8
Mean Deviation				3.46		3.43		3.42		3.37

Continiue of Table 4: Performance criteria for functional, technical, and behavioral performance in the study area.

S/N	PC	Variables	Ministry of Works		Ministry of Water Resources		Ministry of Communication		Ministry of Energy	
19	BP	Furniture arrangement within the office	115	3.7	65	3.82	109	3.63	49	3.8
20		Security	115	3.7	64	3.76	108	3.6	44	3.38
21		Smooth operation of the door	111	3.58	63	3.7	106	3.53	44	3.38
22		The aesthetic quality of the interior	104	3.54	62	3.64	104	3.46	43	3.3
23		Environmental quality ((acoustics	108	3.48	61	3.58	103	3.43	42	3.23
24		Smooth operation of windows and ventilation within the office	107	3.45	60	3.52	102	3.4	41	3.15
25		The proximity of the stair-way to the office location	106	3.41	59	3.47	101	3.36	41	3.15
26		The quality of the exterior	105	3.38	58	3.41	98	3.26	41	3.15
27		Proximity of offices within the Ministry	103	3.32	58	3.41	96	3.2	41	3.15
28		Pedestrian walkways within ministries	98	3.16	54	3.17	96	3.2	41	3.15
29		Proximity to a car parking space	84	2.71	53	3.11	85	2.83	39	3.0
Average				33.98/11		38.59/11		36.9/11		35.84/11
Mean Deviation				3.08		3.50		3.35		3.25

Table 5: POEI of buildings in the study area

S/No	Study Area	Functional Performance	Technical Performance	Behavioural Performance	Post-Occupancy Evaluation Indices
1	Ministry of Water Resources	3.6	3.46	3.08	3.38
2	Ministry of Communication	3.29	3.42	3.35	3.35
3	Ministry of Energy	3.39	3.37	3.25	3.33
4	Ministry of Works	3.11	3.46	3.08	3.22
	Average	3.35	3.43	3.19	13.28/4
	POEI				3.32

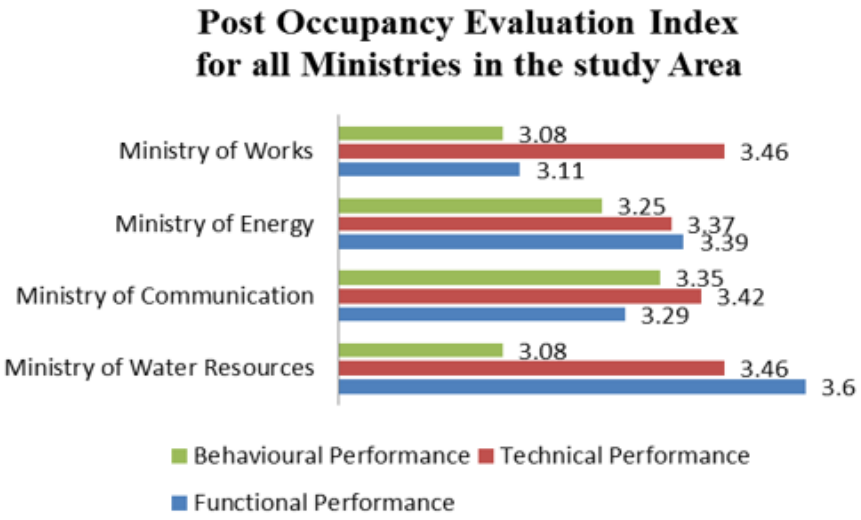

Fig. 6: Post-occupation evaluation index in the study area

orientation of the longer side is towards the North and South direction).

Summary of the Results in the Study Area Based on the Post-Occupancy Evaluation Index (POEI)

The summary of the Post Occupancy Evaluation Index (POEI) obtained from the respondents in the study area, as shown in Table 5, indicates that for Functional Performance in the Ministry of Water Resources, the highest POEI of 3.60 rated "excellent" was obtained. In contrast, the Ministry of Works got the lowest rating, with a 3.11 rating of "Good." For technical performance, all the ministries have a rating of 2.50 – 3.49, interpreted as "Good" in terms of grade. The Ministry of Works and Water Resources had the highest POEI of 3.46, while the Ministry of Energy had the lowest with 3.37. Similarly, for Behavioural Performance, the entire Ministry had a rating of "Good," in which the Ministry of Works and Water Resources had the highest POEI of 3.08 and the Ministry of Energy had the lowest POEI of 3.25. The final POE Indices for the study were arrived at by obtaining the overall average from the study areas for each POEI and dividing it by 4, the number of buildings examined for the study. The study received a POEI of 3.32, and using the mean calibration for POEI, the value lies between 2.50 and 3.49, validated as "Good" and interpreted as being moderately satisfied. Table 5 shows the summary of POEIs in the buildings, and Figure 6 shows POEIs in the study area.

Discussion of Findings from Other Studies

This study agrees with the study by Nkpite et al. (2019) on the vital role that socioeconomic characteristics of building occupants or users (such as gender, age, and level of education, among others) play in POE on individual differences and preferences on the subject matter. Similarly, the study conforms to Preiser et al. (1988), Akman (2002), and Akinwamide (2018) that "for a reliable evaluation, there should be the need for all kinds of values to be put in the measurable unit including socioeconomic characteristics, physical and cultural characteristics among other issues however difficult it may be" since different parties involved in the life cycle of structure do not conceive the question of value in the same manner. As a means to offer a solution to a statement made by Olagunju et al. (2013), Olagunju stated that; "maintenance sections have no conceptual framework in place for evaluating or evaluating the performance of building facilities, and the satisfaction of the users; thus, creating an enormous accumulation of available facility maintenance problems overtime." This study has assessed the type of available facilities provided in the Kwara State secretariat building, such as toilets, storage, corridors, and car parking spaces, and their conditions in line with the users' perception through the POE approach, which is also in line with the study by Khalil et al. (2011). Similarly, this study is in agreement with the studies by Vischer (2002) and Almeida et al. (2021), which state that POE is used as a tool in determining building flaws, expressing design and construction standards, supporting performance measures for asset and facility management, reducing facility life cycle costs by detecting design faults that could lead to amplified maintenance and operating costs, and clarifying design objectives.

Furthermore, the study conforms to Abdulhakeem (2007) and Hou (2023), who described POE as a logical way of gathering data and information on a particular building. Therefore, this study agreed with this fact and conducted a POE of the Kwara state secretariat building toward designing a user-friendly building. Additionally, the study is in agreement with the study by Olagunju et al. (2013), who wrote that one of the ways of conducting accurate maintenance and assessment of a building is to comprehend the collaboration between the needs of the users of the building and the building itself, which the architect can best perform through the post-occupancy evaluation (POE) approach. The study is also in agreement with Oladoja (2015) and Okoye et al. (2020) on the need to consider the vital role of the condition of facilities provided in the different spaces in a building,

such as the adequacy of the storage facility, natural daylighting in offices, environmental landscape and proximity to parking space, and to know if they are in good conditions. In addition, the study by Shadare (2019), Nkpite et al. (2019), and Edidiong (2019) on the significance of evaluating the level of building performance in terms of functional, technical, and behavioral performance. The study concurs with Rathnayake et al. (2020) and Olanipekun et al. (2017) on the importance of the performance evaluation index, which shows the status and developmental requirement in the building elements and users' needs that include elevators, storage facilities, parking spaces, electricity supply, and food canteen, among others, to complement the existing.

This research has contributed to knowledge by providing information on the post-occupancy evaluation of state secretariat buildings, such as knowing the satisfaction level of the occupants toward meeting their needs regarding space utilization: technical, functional, and behavioral factors. It has contributed by providing information that can help improve buildings and building delivery processes and provide awareness for design guides, directing processes, and renovation targeting in a state secretariat building. In addition, the results of this study have led to the creation of new knowledge about user satisfaction in a state government secretariat building through a post-occupancy evaluation approach.

Architectural Implication

The study showed that the available car parking space provided for the users needs to be commensurate with the users' space alongside the proximity of the provided car parking spaces to the office locations. As reflected in the results, the additional storage facility needed to be adequate from the respondents' viewpoint. Hence, it is essential to provide more car parking and storage spaces in the design of the secretariat phase II. Similarly, in future designs, the architect can improve the environmental landscape and aesthetics designs to ensure user satisfaction in the working environment. From the result

Fig. 7: Approach gate to the secretariat building

Fig. 8: View of littered surroundings with poor landscape drainage system

Fig. 9: Disorganised and inadequate parking space

Fig. 10: Pedestrian footpath on soft landscape element (grass)

ig. 11: Messy sewage collection/poor environmental upkeep

Fig. 12: Painting on the wall of the building pilling off.

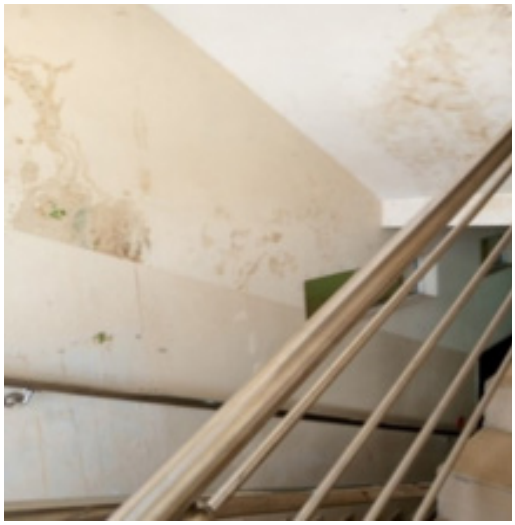

Fig. 13: Traces of Spirogyra and dampness noticed on the wall and underneath the staircase due to poor position or maintenance of the water reservoir

obtained, users of the Kwara State secretariat building were moderately satisfied with the available facilities in the secretariat with a POEI of 3.32, indicating that efforts toward improving some of the spaces and providing more facilities such as elevator, storage, and additional car parking space to enhance the standard of the working environment and satisfaction level of users.

Deductions from Physical Observations in the Study Area

From observation, as shown in Figure 7, the Kwara State Secretariat building looks aesthetically appealing from a distance, but a closer look reveals some shots from the building. The architect raised the offices well in terms of height from floor level to ceiling, but it is noticeable that most office spaces with staff were crowded, with more users/ staff sharing workspaces than the intended number. Similarly, some offices were dark when the source of electricity went out, indicating inadequate natural daylighting within the space, resulting from poor building orientation. In addition, the architect should have considered the less privileged in the building design for easy access to the upper floors. It was observed from the survey that soft landscape elements such as shrubs and grasses needed to be adequately cared for, thereby leaving the environment untidy, as shown in Figure 8.

Similarly, Figure 9 shows that the parking spaces provided needed to be properly organized by the officers in charge, making the environment clumsy and the secretariat parking spaces inadequate. Figure 10 shows that the pedestrian walkway needed to be adequately defined with the landscape element, as footpaths were noticed along planted grass, which displayed poor landscape design implementation. Figure 11 shows messy sewage collection and poor environmental upkeep. The paint on the building and fence walls is fading off (as shown in Figure 12), displaying poor quality or using inferior materials to finish the walls. In addition, dampness and stains were observed under some stairways within the building, which shows the inadequate and inappropriate location of the water reservoir, as shown in Figure 13.

CONCLUSION

This study discovered that the socioeconomic characteristics of staff occupying the spaces have a tremendous behavioral influence or impact on the post-occupancy of the spaces in the Kwara state secretariat building due to their strong relationship. Similarly, the study discovered that the condition of facility indices (CFI) based on the available facilities had a direct link with the activities within the building, which eventually produced the result that the facilities are moderately good. In addition to the above, the study highlighted the importance of user satisfaction by providing information on whether the existing building satisfied the users or not, which, as a result, will help the building industry and state government to ease the gathering of information and knowledge that can be applied by building engineers to advance the procurement of buildings to the benefit of all stakeholders involved. This study has shed more light on the experiences of respondents at the Kwara State Secretariat building through the use of post-occupancy evaluation tools to determine the building's performance. The results provided an understanding of the joint interaction process between the building and its users. It helped the study to identify other facilities, such as additional storage spaces, parking spaces, an elevator, and a canteen, to complement the existing facilities. This study has also revealed that users of the existing Kwara State secretariat building are moderately satisfied based on the POEI obtained from the research work and hence confirmed that the architect should make efforts to improve the spaces and provision of some other facilities to complement the existing ones to enhance the standard of the working environment and performance level of the building. The information gathered from this research will help in strategic planning to provide a better and more functional building, improve design for the future, develop new facilities, and manage the building more efficiently and cost-effectively.

Recommendations

There should be an all-inclusive approach to designing all public or administrative buildings (such as a secretariat building) facilities instead of the present uneven and irregular actions taken over time. The opinion and input of users (such as civil servants) have to be taken through the project's planning, design, and construction phases to meet the project's beneficiaries. Local, state, and federal governments should apply performance evaluation principles to all public buildings to ensure improved quality. In the design of a public building such as a secretariat, users' perceptions of satisfaction should be a significant determinant evaluation tool and element of consideration. Similarly, it is essential to consider various design requirements such as ventilation, lighting, and the adequacy of the working space. Hence, the study recommended that all design specifications be strictly adhered to before, during, and after construction alongside the adjoining facilities. Building design requirements should consider elements that include functional, technical, behavioral, and aesthetic adequacy. The results of POEI obtained from the studied area show that the buildings have yet to reach a point of severe deterioration or dilapidation; therefore, the study recommended that POE be carried out again at the strategic review stage using an investigative or diagnostic approach. Finally, the building should implement a regular building maintenance scheme to help keep the building, its environment, and its facilities in good condition.

AUTHOR CONTRIBUTIONS

O. Makinde performed the conceptualization, methodology, supervision, experimental design, and data analysis and interpretation. Perform manuscript preparation and manuscript edition. O. Alabi performed the software, experiments, and literature review and compiled the data. T. Makinde performed some remaining experiments, writing the review and editing. A. Ayinla performed the visualization and investigation.

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CONFLICT OF INTERESt

The authors declare no potential conflicts of interest regarding the publication of this work. In addition, the authors have witnessed ethical issues, including plagiarism, informed consent, misconduct, data fabrication and falsification, double publication and submission, and redundancy.

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