

End-User's Assessment of Building Facilities Provided in Public Primary Schools in Nigeria

¹Nkpite, Bari-ene S., ^{2*}Deeyah, Christopher L., ³Kpalap, Elgior M., ⁴Igbara Simeon A. and ⁵Oba peter T. S.

¹Department of Estate Management, Rivers State University, Port Harcourt.

^{2,4,5}Department of Estate Management, Ken Saro-Wiwa Polytechnic, Bori.

³Department of Architecture, Ken Saro-Wiwa Polytechnic, Bori

*Correspondence Email: chrisedeeyah@yahoo.com

Abstract: *The main purpose of this paper was an evaluation of provided facilities as to ascertain end users satisfaction levels of public model primary schools in Rivers State Nigeria. The study utilized cross sectional survey research design with a total of 504 structured questionnaires distributed to end-users (pupils, staff and visitors) of the schools. A total of 331 questionnaires were retrieved representing 65.7% of response rate drawn from an earlier research conducted by the authors using questionnaires, walkthrough observation, photographs and key informants. The respondents were selected purposively from selected 12 schools in 6 Local Government Areas and 2 schools from each Local Government Area. Data collected were analyzed with descriptive statistical tools using a 5-point likert scale. The findings showed that the of the sample provided facilities was poor at 76% or <3.00 performance score and 73% or <3.00 satisfaction level with library, ICT/café room, auditorium, sick bay, toilets electricity and water supply, recreational facilities, and classrooms, head teachers office and common areas as provided facilities. The study further revealed the present condition of the provided facilities was caused by vandalism, misuse inadequate finding and intervention by government, introduction of School Based Management System (SBMS) and poor maintenance planning and maintenance works. The study recommended adequate funding of maintenance works be undertaken by state government. And hence POE was able to identify chronic problems affecting school facilities; it should be apply as to improve performance and satisfaction as well as elongating facilities life span.*

Key words: *Building Assessment, Provided Facilities, Facilities Conditions, Performance, Satisfaction, Public Schools*

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1.0 INTRODUCTION

Post occupancy evaluation (POE) involves systematic assessment of opinions about building in use, through careful analysis of buildings from all relevant viewpoints, particularly from the end-users. It is equally a tool accounting for building quality, most especially when planning remodeling, rectification and repairs of existing buildings. POE helps to clarify perceived strength and weakness in order to allocate resources where they are needed (Zabairu and Olagunju, 2012). POE is identify as a tool to measure the performance of building occupied with respect to its activities and the end-users' feelings. In this regard, POE has attempted to provide

link between building production and use and determine an acceptable balance creativity and utility. Watson (2003) stated that POE serves as a tool to account for building quality which is essential when public school buildings are required to demonstrate that provided facilities in buildings are responsibly managed.

Inadequate operation of provided facilities has serious consequences for economic and social development especially in the educational sector. In the case of Rivers State Government Model Primary School Buildings, it may be obvious that the needs and expectation of the end-users would be a paramount consideration since specific maintenance management problems are noticed; attitude of end-user's and misuse of facilities, use of poor quality components, materials and poor workmanship. And this has resulted to the occurrence of defects in the buildings, facilities and services with the recurring maintenance problems that are not addressed. Nkpote (2017) stated that management of any process involves assessing performance, satisfaction and maintenance management is not an exception.

Once public school buildings commissioned and handed over to the end-users, they are rarely revisited and reassessed that leads to a situation where every single building remains a unique specimen, repeated design mistakes, etc. And when some reevaluation of building is undertaken, it is often based on nonsystematic trouble shooting due to lack of standard procedures and protocols (Nkpote and Wokekoro, 2017). Kelvin and Fadason (2012) asserts that building value management evaluation criteria can help to improve building performance, while contributing to end-users' satisfaction. End-users' satisfaction although subjective, must be brought to bear in order to harmonize values with all stakeholders in building production and use (Hendrickson and Wittman, 2010). In order to measure performance and set priorities, the function and performance of buildings and its facilities with their appropriate standards will depend on the end-users' perception and their primary needs and expectation that POE can be accomplished. A need therefore arises to evaluate end-users' perception with provided facilities in Rivers State Model Primary School Building.

1.2 Aim and Objectives of the Study

This paper focused on post occupancy evaluation of provided facilities of public model primary schools in Rivers State. The objectives of the paper are to;

1. Evaluate performance and satisfaction levels with provided facilities
2. Examine the conditions of the provided facilities

1.3 Scope of the Study

The study's scope is limited to the educational buildings, particularly, the newly built prototype Rivers State Model Primary School Buildings in all the 23 Local Government Areas of the State as test case for the primary schools in Nigeria. The school buildings are completed and functioning as well, and were constructed at different, dates across the state; from 2007 to 2010, and occupied from 2011 to 2015.

2.0 LITERATURE REVIEW

2.1 Post Occupancy Evaluation

The term "Post Occupancy Evaluation" (POE) refers to the assessment of a completed constructed facility during the occupancy. Zabuir (2006) aver that POE is a method of measuring performance of a building in use, with respect to the brief, the goals of the design team, and activities and feelings of the end-users. Barret (1999) stated that the building end-

users' evaluate the suitability of the building as to meet their special needs and expectations. Preiser (1995) define POE from the facility management's perspective as a "diagnostic tool and system which allows facility managers to identify and evaluate critical aspects of building performance systematically. Generally, POE intends to convey the parameter of building that work well by focusing on the ones that be repeated in future building maintenance (Nkpite and Wokekoro, 2017). POE can be used by variety of industry professionals and owners as well as for a number building types and its facilities; to shows that there is no an industry-acceptable of POE (Meir, Garb, Jiao and Gielsky, 2009). To different professionals in different fields of endeavour different definition and that is why actors participated in the uses of building assessment; investors owners, operators, maintenance staff and end-users' (Meir et al, 2009). Post occupancy evaluation differs significantly from conventional surveys and market research that uses the direct experiences of building works for its intended purpose (Nkpite, 2017).

2.1.1 POE as Building Performance Tool

Vischer (2002) stated that POE is used not only to determine client's or end-user's satisfaction, but it is also used to fulfill other objectives; detecting building defects, design, construction criteria maintenance, performance measures and facility management, lowering facility lifecycle cost and operating costs; clarify design and improve building performance. In the same vein, POE provides valuable information to support the goal of continuous improvements, as it assesses the degree to which buildings enable users to fulfill their intended goal (Huizenga, Abba Zadely Zegrens and Arens (2006). Preiser and Vischer (2002) asserts conducting POE for various categories will result in individual outcome arising from behavior research, feedback, space planning and capital asset management, etc. POE techniques have become an important asset in the toolkit of facility managers; data gathering methods can be applied to various situations that would benefit facility performance in the continuous quest for quality improvement (Preiser, 1995).

2.1.2 Importance of POE as Facility Management Tool

POE is a powerful tool to enable owners determines the future value of a facility in terms of economic, environmental, human and community outcomes (Huizenga et al, 2002). According to Huizenga et al (2002), occupants' satisfaction surveys are useful in facilities management as:

- It provide valuable information and results in the IEQ performance of built space;
- It assess the effectiveness design and operation of facilities
- It renders identification of environmental factors that needed improvement;
- It diagnosis causes of occupant dissatisfaction and their perception of facility performance.

2.2 Educational Facilities Performance

Natasha, Nawawi, Hashim and Husin (2014) explained that the main agenda of constructing school facilities is to disseminate knowledge and simultaneously functions as a "hub" to local communities for various purposes, considering school facilities as factors in the production of future leader. It is not deniable to understand the total performance of school facilities in holistic senses (Wong and Jan, 2003). In order to prove "value for money" on the development of educational facilities, there are needs to better understand how interaction between people, facilities and the school buildings influence the delivery of educational goals recognizing the conduciveness of facilities towards learning (Amaratunga and Baldry, 2000).

2.2.1 Problems Associated with Facilities Performance

Doidge (2001) asserts that assessment upon facilities condition does not explicitly address the relationship between facilities physical forms and various educational activities that take place with the building. Increase in facilities usage has contributed to risk occurrence, inefficient energy use, climate discomfort and these decreases the total performance system of the facilities yearly (Hassanain, 2007). Handling the forces of change, within the used facilities required recognizing the distinctions between various elements of construction so that part can be replaced or change without distorting that whole (Edwards, 2000). According to Natasha et al, (2014), concurrent allocation of proper monitoring assessment on facilities is critically allied to the changing needs on operations and functions of facilities identifying the ways to ensure the asset fit to face various challenges. Inevitably, buildings operations and facilities are vulnerable to various factors; the performance failure of facilities requires relevant stakeholders in educational buildings to be familiar with the financial and safety risk posed, and by identifying the latent risks impact from the facilities performance.

2.3 Concept of Provided Facilities

Provided facilities are the facilities in the building (property), while the infrastructure is the building itself (Ali et al, 2010). Provided facilities represent the engine of social and economic activities in the educational sector which is the major challenges of economic development (Amobi, 2003). In Nigeria, school facilities provided services that respond to effective demand which are the goals and the measure of development in a society. These facilities are assets in Nigerian schools that are not generating the quantity and quality services demanded (Amobi, 2003). Provided facilities in schools can be said to be the umbrella term for many activities referred to as social overhead capital which is important having strong links towards growth, poverty reduction and sustainable environment? Therefore, no facilities is maintenance free, so every structure, heritage or new requires care to limit deterioration.

2.3.1 Purpose of Provided Facilities in Schools

The main purpose of a school is to promote equitable physical teaching and conducive learning environment (Financial and Fiscal Commission, 2009). Public school facilities in a dilapidated condition pose a challenge to the achievement of the educational goal. UNICEF (2003) emphasized that the unexciting and dilapidated school facilities can be a breeding ground illiteracy, violence and diseases. Because is the provided facilities are poor, even the teachers cannot deliver the much needed teaching in such a situation coupled with if the season is a rainy one. Then it is obvious that the number of times a teacher and pupils can attend classes will be doubt minimal, this encourages illiteracy among the pupils and becomes a breeding grounds for unwholesome activities by the pupils. It is daunting to rectify even the more deplorable facility condition endured by millions of children already in schools, conditions that are anti-ethnic to learning children's well being and their future livelihood (UNESCO, 2009). Also, Hunter (2010) stated that to find a well maintained school facilities; it is more likely to be in the private schools for the efficient. The difference is unequal provision and maintenance of school facilities has not only been a problem in Rivers State alone, but Nigeria as a whole where the less privileged attended classes in dilapidated school infrastructure, poor facilities equipment, overcrowding, etc (Osaro, 2017).

2.3.2 Maintenance of Public School Facilities

According to Amobi (2003) as cited Osaro (2017), services associated with the use of public school facilities accounted for 10% to 15% of gross domestic product (GDP) in Nigeria. Nigeria has invested a lot in providing new facilities in public schools, the result has been a dramatic increase in social infrastructural services, but such increase does not really raise productivity and improve the living standards of citizens because infrastructure ought to be reliable and efficient (Osaro, 2017). Categorically, it can be stated that good facilities lowered production cost. Public school facilities investment has been misallocated in Nigeria whereby the country has too many new facilities but too little maintenance. Inadequate maintenance has been the failure of infrastructural production (Obiegbu, 1998 as cited Osaro, 2017). Ali, Kamarruzzaman, Sulaiman and Peng (2010), define facilities maintenance as the combination of technical and administrative action to ensure that the items and elements of a specific facility are kept and restore in an acceptable standard to perform its required functions.

Barlow (2003) stated during the 1990's in the United Kingdom, schools developed problems such as leaking roofs, dis-functional heating system, and the deterioration of building structure as a result of low level of investment from both government and local authorities for their maintenance. This shows that poor maintenance can also result from inaccurate or inadequate budgetary for maintenance work. This inability to maintain school facilities is that funds are usually based on the perceived needs and priorities of the government and not the individual schools (Moberly, 2002).

2.3.3 Condition of Public Schools Facilities

In recent years, several studies have shown that school facilities are in deplorable state of disrepair. Adeyemi and Adu (2010) describe public school facilities to be in a state of disrepair and characterized by unnumbered dilapidated classrooms. An approximate of 276, 854 classrooms were dilapidated affect teaching and learning; taken place in a stressful and uncondusive environment with a serious implication in Nigeria. Also, United Nation Education Committee (2008) as cited Osaro (2017) emphasized that 90% of public schools facilities was considered to be a dilapidated state at all levels, describing public schools environment in Nigeria as a truly pathetic and sorry situation that need urgent attention.

Ikoya and Onoyase (2008) stated the various problems experienced in the educational sector require urgent national priority to the task for the provision of facilities, maintenance and refurbishment of dilapidated classrooms and the enormous task for all stakeholders to build new ones. There is a critical need for greater government and donor investment in Nigeria for improvement of public schools building and its facilities (United Nation Education Committee, 2008 as cited Osaro, 2017). The major constrain in public schools are deficiency in floors, that needed plastering, building with mud walls, without doors and windows and non availability of sanitary convenience (Asiabaka and Owerie, 2003). United Nation Education Committee (2005) as cited Ikoya and Onoyase (2008) indicated that 60% of classrooms are not suitable for learning, while 90% of laboratories, 68% of libraries, 50% of toilets are in bad conditions and needed either replacement in Nigeria. The instances where dilapidation is not extreme, the public school facilities are not adequate as it relates to physical condition which includes library, toilets, laboratory and furniture (Adegun, Osifili and Yaba, 2009). The trend of constructing public school facilities without proper evaluation as to manage the whole lifecycle of facility over the years had been impeded. The involvement of POE as assessment tool in public schools will enhance the performance of facilities and end-users' satisfaction as well as to ensure proper

maintenance. It is against this background that the study examined of provided facilities in Rivers State Model Primary School Buildings.

3.0 Research Methodology

The research design utilized in this study was a cross sectional survey that involves a number of prototype buildings built across the 23 local government areas by the Rivers State Government. The population of the study was 138 completed and functional school buildings in the State including staff, pupils and visitors with 331 questionnaires retrieved representing 65.7% reponse rate. The questionnaires used a 5point likert scale to the performance and satisfaction level with the provided facilities; 1= very dissatisfied, 2= dissatisfied, 3=undecided, 4=satisfied, 5= very satisfied. The study also uses observation and photos to identify the condition of the provided facilities in public schools. Descriptive statistical tools such as percentage and mean score were used to analyze collected data.

Table1; Name and Address of Schools Studied

S/NO	Names/Address of Schools	Local Govt. Area
1.	State Primary School 1, Kpite	Tai
2.	State Primary School, Ueken	Tai
3.	State Primary School, Rumueme	Obio/Akpor
4.	State Primary School, Rumurolu, Oro-Evo	Obio/Akpor
5.	State Primary School, Ogale	Eleme
6.	State Primary School, Aleto	Eleme
7.	State Primary School, Igwurutta	Ikwerre
8.	State Primary School, Aluu	Ikwerre
9.	Port Harcourt Model Primary School, Rumuwoji	Port Harcourt
10.	St. Andrews State School Diobu	Port Harcourt
11.	State Primary School, Ndashi	Etche
12.	State Primary School, Okomoko/Egwi	Etche

Source: Author's Field Survey, 2017.

4.0 RESULTS AND DISCUSSION

The results of the study are presented below.

4.1 Overall Performance Levels of Provided Facilities in Various Schools

Table 2 showed that less than average (<3.00) of the respondents were dissatisfied with auditorium, sickbay, toilets, library, electric supplies and recreational facilities, while more than average (>3.00) of the respondents were satisfied with classrooms, foyer, head teachers' office, etc. It implies that less than half of respondents are dissatisfied with auditorium poor illumination, sickbay, toilets, and standby generator as mere artifacts provided, while recreational facilities are damaged.

Table 2; Performance Levels of Provided Facilities

Provided Facilities	N	Sum	Mean	Std. Dev.	Remarks
Classrooms	331	1175	3.549	.87844	Satisfied
Library	331	939	2.836	.50134	Dissatisfied
ICT/Café room	331	1045	2.157	.45959	Dissatisfied
Head Teachers Office	331	1344	4.061	.42644	Satisfied
Foyer/common areas	331	1212	3.661	.48332	Satisfied
Auditorium	331	819	2.474	.58048	Dissatisfied
Sick bay	331	771	2.329	.79123	Dissatisfied
Toilets	331	642	1.939	.38273	Dissatisfied
Standby Generator	331	663	2.003	.67874	Dissatisfied
Over head tank (water supply)	331	538	1.625	.49368	Dissatisfied
Public Power (PHEDC)	331	552	1.667	.4428	Dissatisfied
External outside areas	331	905	2.734	.86359	Dissatisfied
Recreational Facilities	331	914	1.854	.37299	Dissatisfied

Legend: <3.00 dissatisfied and > 3.00 satisfied

Source: Author’s Field Survey, 2017.

4.1.1 Facilities Performance Levels Based on Expert’s Rating

Based on the results obtained from the expert rating survey; Figure 1 summaries the percentages of the overall indicators as related to the provided facilities performance level. A total of 15% rated the facilities as very poor, 35% as poor, 26% as moderate, while 18% as good and 6% as very good. Accordingly, 76% (15%, 35% and 26%) of the expert rating on the level of performance of provided facilities were confirmed between poor and moderate.



Figure 1: Expert’s Rating of Facilities Performance Levels Based
Source: Author’s Field Survey, 2017.

4.2 End-users Satisfaction Level with Provided Facilities in Various Schools.

Table 3 shows the overall end-users’ satisfaction level with provided facilities in the various schools studied. Table 3 revealed that the end-users’ across the twelve schools with mean scores of 3.00 and above were satisfied with the classrooms. It implies that the classroom has larger

space, but with peeled painted walls. In all the twelve schools, the end-users indicated that they were dissatisfied with the libraries, ITC/café rooms, and sickbay, water and electricity supplies, and recreational facilities with mean scores less than 1.00 to 2.99 as for provided facilities in the various schools. The study further showed that in eleven schools, end-users' were dissatisfied with auditorium having a mean score less than 2.30, while in one of the school (Kpitem) they were satisfied with the auditorium with mean score of 3.00. The study also indicated that in eight schools the end-users' were satisfied with the head teachers office with mean scores more 3.00, while in four schools (Okomoko, Diobu, Igwuruta, and Ore-evo), the end-users' were dissatisfied with the head teachers office having less than 2.44 mean score. Table 3 also showed that eleven of the twelve schools except Kpitem, the end-users' were dissatisfied with the foyer/common areas with mean score less than 2.56.

Table 3; End-users Satisfaction Level with Provided Facilities in Various Schools

Items	Kpitem	Ueken	Oro-Evo	Rumueme	Rumawoji	Diobu	Igwuruta	Aluu	Ogale	Aleto	Okonoko	Ndashi
Classrooms	4.00	3.38	4.11	3.38	3.38	4.11	4.11	3.38	3.30	3.38	4.11	3.30
Library	2.80	2.00	2.66	2.00	2.00	2.66	2.60	2.00	2.00	2.42	2.66	2.00
ICT/Café room	2.80	2.00	2.56	2.00	2.00	2.56	2.56	2.00	2.15	2.00	2.56	2.00
Head Teachers office	4.80	3.50	2.44	3.50	3.52	2.44	2.40	3.50	3.50	3.50	2.44	3.50
Foyer/common areas	3.80	2.50	2.56	2.50	2.50	2.56	2.56	2.50	2.50	2.56	2.56	2.50
Auditorium	3.00	2.25	2.00	2.25	2.25	2.00	2.30	2.25	2.20	2.25	2.00	2.25
Sick bay	2.40	2.25	2.00	2.25	2.20	2.00	2.00	2.25	2.25	2.26	2.00	2.25
Toilets	2.00	2.25	2.22	2.25	2.20	2.22	2.30	2.25	2.20	2.25	2.22	2.20
Standby Generator	2.00	2.25	2.00	2.25	2.25	2.00	2.25	2.25	2.25	2.30	2.00	2.20
Over head tank (water supply)	1.30	1.50	1.44	1.50	1.55	1.44	2.00	1.50	1.20	1.55	1.44	1.50
Public Power (PHEDC)	1.70	2.25	2.11	2.25	2.25	2.11	2.00	2.25	2.25	2.00	2.11	2.25
External (outside) areas	2.60	2.00	1.33	2.00	2.20	1.33	1.50	2.00	2.00	2.16	1.33	2.00

Legend: <3.00= Dissatisfied 3.00 Satisfied.

Source: Author's Field Survey, 2017.

4.2.1 End-users Facilities Satisfaction Level Based on Expert's Rating.

Based on the results obtained from end-users' satisfaction of the expert rating survey; Figure 2 summaries the percentages of the overall indicators as related to end-users' satisfaction level with the provided facilities. A total of 16% were very dissatisfied, 32% dissatisfied, 25% as moderate, while 20% of the end-users were satisfied and 7% as very satisfied. Accordingly, the level of satisfaction for 73% of the respondents ranged from very dissatisfied to moderately satisfy. This large percentage was fully compatible with the ratio obtained from the expert rating (73% very dissatisfied to moderately satisfied), which should be remedied to overcome the drawbacks and defects of the provided facilities that may become severe if left unattended.



Figure 2: End-users Satisfaction Level of Facilities Based on Expert's Rating

Source: Author's Field Survey, 2017.

4.3 Conditions with the Provided Facilities.

On the conditions with the provided facilities in the public schools, the facilities were deteriorating with a lot of defects. Defects represents lack of appropriate functional services being referred to as anything that hampered the functional performance of facilities where the end-users' would lay more emphasis on the provision of comfort or satisfaction. An in-depth interview reveals that poor construction of facilities, lack of funds, inadequate procurement process and lack of government interventions including the introduction of School Based Management System were identify as what kept the facilities in such conditions.



Plate 1: Vandalised Water Borehole at Ogale



Plate 2: Vandalised Generating Set at Rumuwoji



Plate 3: Damaged Recreational Facilities at Kpите



Plate 4: Broken Desk and Lockers at Okomoko.



Plate 5: Rotten Ceiling in Classroom due to roof leakages at Rumueme



Plate 6: Collapse Ceiling in Auditorium due to Inferior Materials at Rumumasi.

Sources: Author's Field Survey, 2017

5.0 CONCLUSION AND RECOMMENDATIONS

The study examined end-users' assessment of provided facilities in Rivers State Government Model Primary School Buildings. The findings showed that the performance of sample provided facilities were generally poor (76% or <3.00) which include ICT/café rooms, sickbay, auditorium, electricity and water supply, toilets and recreational facilities except classrooms, foyer and head teachers office been rated good. The study also found out that the end-users' across the twelve schools were dissatisfied with ICT/café rooms, sickbay, auditorium, electricity and water supply, toilets and recreational facilities representing 73% or <3.00, and were satisfied with classrooms, foyer and head teachers office as the provided facilities in public schools.

Furthermore, the study indicated that the present conditions with provided facilities were caused by vandalism, misuse, inadequate funding of maintenance works, poor maintenance planning, lack of government intervention and the introduction of school based management system. The study concluded that the majority of the parameters or aspects of provided facilities performance in public schools has to do with end-users' satisfaction levels. Because the performance scores need to be compared with end-users' satisfaction scores, as they had

sufficient time to experienced the functioning of the facilities; hence were able to identify any chronic problems affecting the school facilities. The study recommended that adequate funding and prompt attention should be given by the State Government on maintenance works as to improve facilities performance, end-users satisfaction as well as increasing facilities lifespan.

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