

Climate - A Key Determinant to Design and Maintenance - An Appraisal of the National Theatre, Iganmu, Lagos

Asaju O A, Dare-Abel O A, Daramola S A

Department of Architecture,
Caleb University, Imota, Lagos State

Abstract: The importation of designs and materials usage without consideration given to difference in climate is of high negative effect to sustainability and maintenance of building as not all designs can successfully be integrated into all climates. Building is more than just aesthetics as functionality is the key to design. Thus, this paper was aimed at studying the challenges of importation of design taking an appraisal of the National Theatre, Iganmu, Lagos which is a replica design of Palace of Culture and Sports in Varna, Bulgaria, highlighting the failure in maintenance and subsequent abandonment or under-usage of different spaces within the iconic edifice as a result of non-conformity of a design meant for a cold climate like Bulgaria, to a tropical region. A close examination revealed that consideration was not given to climate, size, materials usage and maintenance before the edifice was planted into the geographical space. Data for the study were collected through well-structured interviews and questionnaire administered to staff, users and art professionals. The findings revealed that the possible lasting solution to maximum usage of the structure will be the introduction of an alternative source of power as there are no natural lighting and ventilation to 90% of the spaces which makes them inhabitable due to power outage.

Keywords: Aesthetics, Building, Climate, Functionality, Imported design, Non-conformity

1. Introduction

Every design is solution to a problem with ground rules guiding the execution. The basic of all designs is to primarily meet its functionality purpose, as building is more than a shell of aesthetic and so should be able to perform both requirements without jeopardizing one over the other. A functional building may necessarily not be aesthetically pleasing but an aesthetically pleasing building should be functional. Ahoo Malekafzali, (2017) pointed out that today's architects and builders are increasingly focused on how to create structures that have less impact on the natural environment and climate. The principle of putting form before function may not naturally work in some climate as the spaces are forced to conform without due consideration to thermal comfort of the eventual users. The idea behind every design is that which should be considered thoroughly in specific to the climate and usage as no matter the level of functionality a building may attained, there is no rational behind it being constructed if maintenance is not planned alongside as it will eventually lead to waste of public money when it begins to deteriorate.

Iconic buildings are outstanding designs that stand out in their respective locations. The National Theatre, Iganmu, is one located in the mainland area of Lagos State. The purpose for its erection has however being forfeited over the years due to the peculiarity of the design and usage of materials that are not tropical climate friendly.

1.1 National Theatre, Iganmu, Lagos

The National Theatre building was constructed between 1974 and 1975 and covers an area of 23,000 square meters, standing well over thirty-one meters high. Its shape has been compared to a saddle and, partly because of the Nigerian coat of arms over the main entrance, to a General's cap. Its design is based on a Bulgarian sports center, but it is twice as big as the original. The multipurpose National Theatre stands well over 31 meters in height and has seven floors. It was commissioned by General Olusegun Obasanjo (Military President of Nigeria, Feb. 14th, 1976 – Oct. 1st, 1979) on September 30th, 1976. This was about five months before FESTAC '77 (Jan. 15th, - Feb. 12th, 1977) started. Though not primarily designed for the festival, it was the first major activity that it hosted and brought out its beauty.

The National Theatre complex has the following facilities:

- ✓ Main hall (5,000 seats)
- ✓ Conference/Banquet hall (2,000 seats)
- ✓ 2 Main exhibition halls (1839 square meters each and 2,000 seats each)
- ✓ 2 Cinema halls (700 seats each)
- ✓ The V.I.P. lounge (500 seats)
- ✓ The press conference hall (300 seats)
- ✓ 2 Massive lobbies (500 seats each)
- ✓ The roof garden (round the theatre building)
- ✓ Car parks

In addition to the spaces mentioned above, the theatre has 7 floors and 25 lifts (sadly, none is presently working) to complement its aesthetic nature. It also comprises of 250 toilet rooms and 300 urinals located at the basement which is in perpetual darkness because of no natural lighting penetration from any angle. A 10-room public toilet building is also located outside the main theatre building coupled with 2 boreholes and an underground tank which provide the building's water requirements (this has long become history).

By 1991, thirteen years after it came into use, there had been no routine maintenance of the building by the Bulgarians contractor, though it was not certain if it was part of the initial contract and gradually the facilities ceased to function (Ahmed Yerima, 2010). The roof of the main auditorium was the first to crack due to continuous exposure to sun, expansion and compression which broke the bond between the cements and the reinforced concrete with water dripping into the lobby and hall, causing gradual damage to the stage, seats, lighting, amplification system, and priceless art works. It didn't take long before the crack widens and spreads to the other wings leading to saturated floors and posing safety hazard. This was a fallout of the building designed to operate in a temperate climate becoming unbearably hot due to poor insulation property of concrete and was described as an "oven". The rigidity of the design made it practically impossible for adaptation as openings could not be made to allow for cross ventilation. The "architectural masterpiece" and the "major legacy of Festac 77", was gradually becoming a structural nightmare, a millstone around the necks of theatre lovers.

Nwakunnor et al. (2014) also report the decline of the theatre: "In the late 1990s, the theatre began to face the agony of poor facilities. The sprawling complex was in darkness due to a lack of electricity supply. The structure was also reported to have been sinking and the roof broken at a time. There was equally a lack of comfortable seats for members of the audience, who pay to watch performances. This gave rise to situations where members of the audience were uncomfortable, or stand all through productions".

Soyinka Wole (1962) "The building itself is an embodiment of the general misconception of the word "theatre". Theatre, and especially, a "National Theatre", is never the lump of wood and mortar which architects splash on the landscape. We heard of the existence of a National Theatre and ran to it full of joy and anticipation. We discovered that there was no theatre; there was nothing beyond a precious, attractive building in the town center. But even within that narrow definition of the word, we had expected an architectural adventurousness. Kampala is after all, a cosmopolis, so we felt justified in expecting from the theatre, not only a sense of local, but of international developments in the theatrical field. What we found was a doll's house, twin brother to our own National Museum. There were cushioned spring-back seats I approved this, having nothing against comfort but it was disconcerting to find a miniature replica of a British provincial theatre". What a description of our national glory.

1.2 Climate and Architecture

Climate is one of the important factors which affect architecture. In architecture climate influences planning, structure, type of roof and external treatment (Shastri J D, 1959). He reiterated that climates vary from cold to hot with cold denoting compact and enclosed planning while heat demands openness. The need for openness to allow for thermal comfort in climate with solar heat will allow the occupant the necessary comfort needed for habitation. He further pointed out that climate is determined mainly by solar heat and glare, prevailing winds, humidity and rain. These climatological factors should be so dealt as to produce a physically and psychologically comfortable structure for residence, work or recreation.

Ahoo Malekafzali (2017) defined climate-responsive architecture as a design practice centered on creating buildings that function in lockstep with the local climate, not in spite of it. He explained that building design should reflect the weather conditions in the precise area where the building is constructed. The importation of designs and materials usage without consideration given to difference in climate is of high negative effect to sustainability and maintenance of building as not all designs can successfully be integrated into all climates. Ahmed Yerima (2010) once pointed out while referring to the National Theatre that Nigeria, like other African countries including Ghana, made the similar mistakes in replicating foreign monuments without thought to the African environment, the testing climate and the fallible maintenance culture.

The challenge associated with the culture of maintenance in developing countries like Nigeria should be a reason while those in power should desist from the idea of importation of designs. Daramola et. al. (2021) posed that public infrastructures put in place in Nigeria generally were left unmaintained and they gradually decay without reaping all the benefits due to lack of adequate maintenance. Climate friendly and responsive design will cost less in maintenance than that which is foreign so the need to stick to the peculiarity of the climate and choice of materials to reduce challenges that maintenance poses as the building ages. However, maintenance should be planned alongside a climate responsive design to reduce the rate of abandonment of infrastructures that is growing by the years in the country.

2. Methodology

In an attempt to gathering accurate information for the identified problem, both primary and secondary data were opted for. Prominent senior staffs were consulted for permission to ascertain facts regarding functionality and level of maintenance that the building had undergone over the years thus forming part of the data. The primary data were thus gathered through the use of questionnaire and physical interview. The questionnaire was a sample of 50 comprising of questions on issues relating to the National Theatre, Lagos addressing form, function and defects according to the degree of importance.

Data Presentation and Analysis

The data were presented using table and graphs for clarification and better interpretation. The analysis tools included both descriptive and inferential statistics. Little or no attention was given to gender in the data gathering as all were taken as one.

Table 1.1 - Aesthetic (form) view of the Theatre

Categories	Unique Design	Nothing Special	Indifferent
Staff	22	2	1
Artists	17	1	5

Table 1.2 - Functionality of the building

Categories	Very Functional	Not Functional
Staff	13	11
Artists	18	5
Passersby	20	2

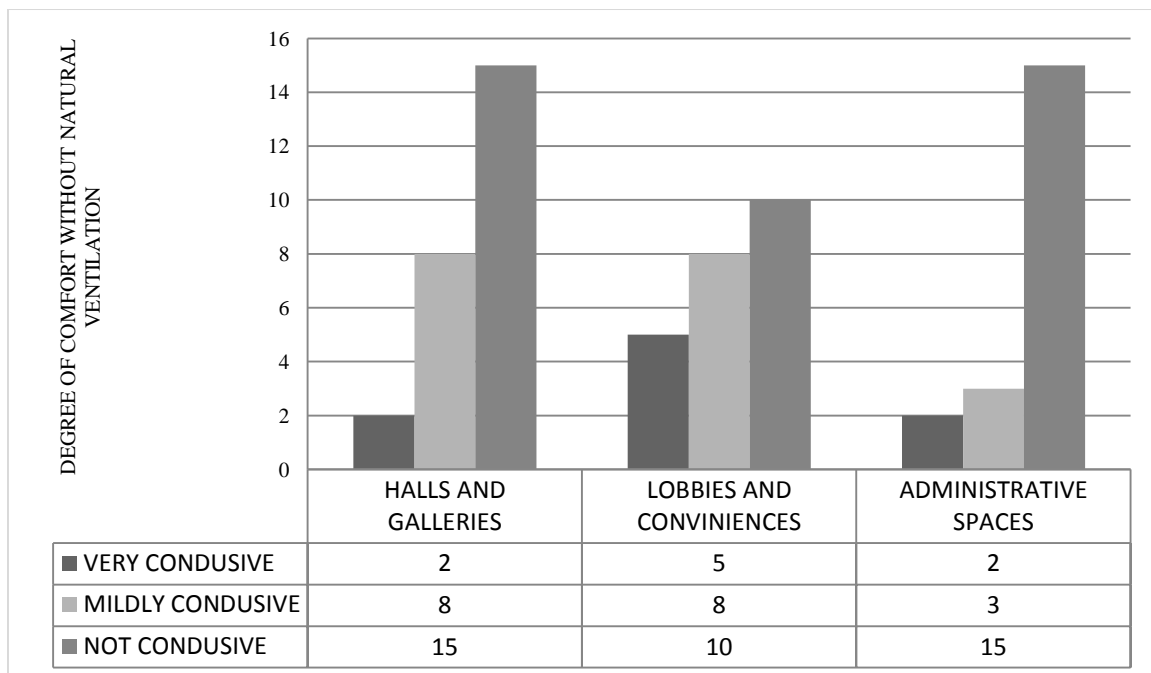


Figure 1 - User's View On Thermal Comfort of the Facility without Natural Ventilation
(Source: Author's Field Survey, 2019)

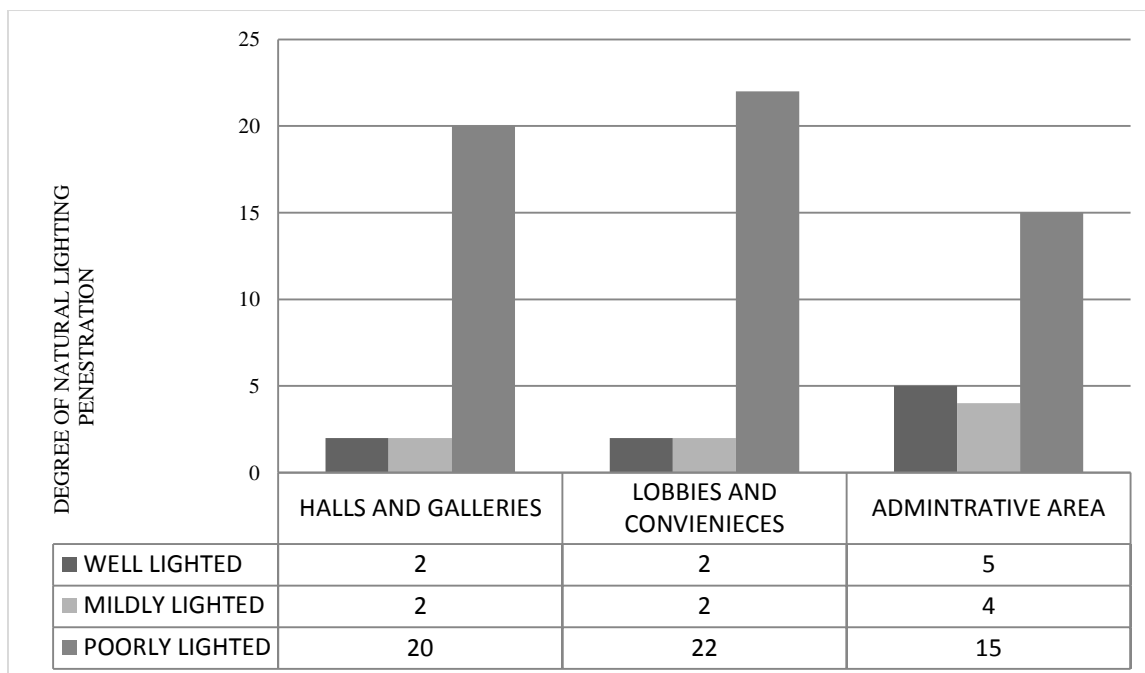


Figure 2 - User’s View of the Facility without Natural Lighting
(Source: Author’s Field Survey, 2019)

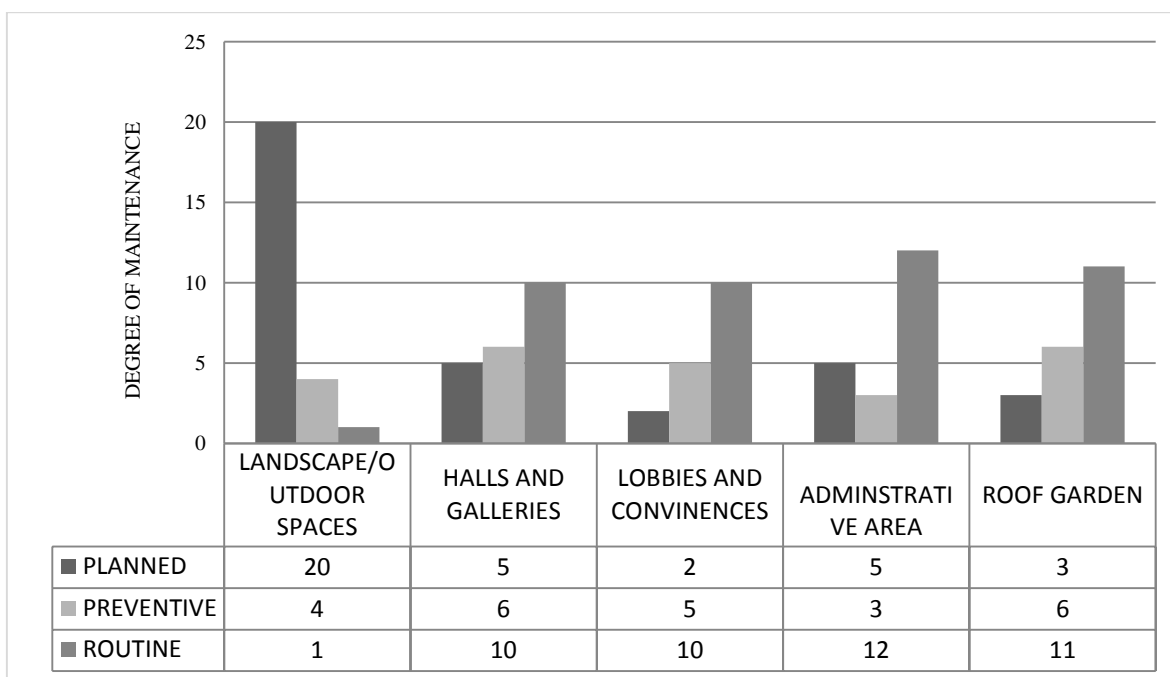


Figure 3 - User’s View on Maintenance of the Facility
(Source: Author’s Field Survey, 2019)

3. Discussion And Findings

As the years passed, the sheer size and complexity of the National Theatre building created more and more problems for both the users and administrators. A building that had been ideal for Festac could not be used to its full capacity in the period that followed. Femi Osofisan (2005) expressed his view thus “the physical structure of the Theatre was a problem, to have in Lagos a massive building like that, where no air can enter from outside and where heat is deliberately trapped inside”. That’s exactly the challenge when climate is not a determinant in design. No matter the level of maintenance, which could be termed as ‘total overhaul’ the best cannot be achieved as the fundamental principle of design has being neglected from the beginning.

Presently, maintenance has commenced which is believed to be a major one as previous ones was to sections of the structure especially the roof garden which is full concrete and has being allowing seepage of water of the years. Though little has being done to stop it, it is still believed that more will be achieved after the ongoing maintenance must have being completed. It is believed that this maintenance will bring a total transformation to the building, but will it also reverse it to a climate friendly design? That we are

sure it is not possible. Hence the need to chart a course that can make the edifice more functional after the renovation have being completed so as not to continue to go round the same circle.



Figure 4 - Hoarded Structure for Rehabilitation
(Source: Author's Field Survey, 2021)



Figure 5 - Pictures Showing Equipments and Containers for Work
(Source: Author's Field Survey, 2021)

4. Conclusion and Recommendation

Global warming and the change in ozone layer have made it a necessity for all designers to tow the path of climate friendly designs. Naturally, the comfort of building cannot be maximized if the building does not fit into its geographical environment perfectly both in form and function. Alongside climate friendly designs are materials as they perform differently in weathers and thus not all materials can be unilaterally used.

Hence, to chart the way forward, buildings that will be designed or integrated into tropical climate like Nigeria should be that which admits natural lightings to most if not all the spaces that requires it. An admittance of natural ventilation if possible should also be encouraged to specific spaces for comfort of users and habitants.

In the case of our glorified, iconic, National Theatre, since there is little that can be done because of the type of building and the uniqueness, a thorough approach that can be the possible way out is the introduction of alternative power as the poor supply that is ravaging the power sector is not that which could be resolved immediately. The abundant solar energy can be harnessed and panels arranged on the concrete roof garden to supply uninterrupted power to the edifice or alternatively, as Lagos state is a coastal state, the water body could also be used as turbines to generate power keeping the building running. No matter the level of maintenance injected into the structure, if power is not harnessed from other sources and introduced into it, it will still not function to maximum capacity.

References

- [1] Ahmed Yerima (2010) The Nigerian National Theatre at Iganmu: The legacy of a festival, a challenge to the future
- [2] Ahoo Malekafzali (2017) The Future of Architecture: Climate-Responsive Design
- [3] Daramola et. al. (2021) Maintenance Culture in Nigeria - A Case Study of National Stadium, Surulere, Lagos, Nigeria

- [4] Osofisan F O (2005) Interview on the Management of the national theatre, Lagos. March 31, 2005
- [5] Shastri J D (1959) Effect of Climate on Architectural Expression In Seminar on Architecture, Edited by Achyut Kanvinde, 166-170. New Delhi: Lalit Kala Akademi
- [6] Soyinka W (1988) "Towards a True Theatre" in Art, Dialogue & Outrage: Essays on Literature and Culture. By Biodun Jeyifo. Ibadan: New Horn Press
- [7] Obasanjo O (1977) FESTAC 77. Lagos: African Journal Limited. P. 6
- [8] Onwuanyi et. al. (2017) An Empirical Study of Nigeria's Built Heritage: The Lagos National Arts Theatre and Stadium
- [9] Nwakunnor G A, Nwanne C, Awa O (2014) Nigeria: national theatre - How policy inconsistency, negligence starve art house. The Guardian. Available at <http://www.nigerianguardianews.com> (Accessed on 10 September, 2016)
- [10] Nwanaju Uzoma T (2013) Theatre Management in a Developing Nation: An appraisal of National Theatre and Muson Centre, Lagos
- [11] The Mortgage Group (2016) Architectural Significance Definition