



**OPTIMIZING SPATIAL CONFIGURATION AND CIRCULATION IN A
PERFORMING ART CENTRE**

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ABSTRACT:

This study is focused on the optimization of spatial configuration, requirement, interrelationship and design in performing spaces such as theatres, halls, auditoriums, etc. through design guidelines, codes and standards and research studies to analyze the various criteria for performing art spaces for specific or multipurpose use as well as how it relates to users of the facility. This body of work is inculcated in the proposed design of a center for performing arts for Port Harcourt city, rivers state, Nigeria as a result of underdevelopment of such spaces for performing arts form, hence the prospect of a center for performing art for Port Harcourt city would revitalize the state and project it on a global platform through clearly defined spaces intended to house performing arts forms for both performers and spectators while generating revenue for the state government amongst other benefits, this is necessary in sustaining the art forms and cultural heritage of the people of Port Harcourt city while seeking to strike balance between the culture of the people and the international standard of performance spaces through articulate and architectural approach using design elements. In the course of this study, elements from existing performance spaces as that for which this study is being planned will be explored through research analysis and case studies, as guide for the development of this research; however, caution and careful considerations will be given as to the conclusion and recommendations for this research with respect to environmental factors. Finally, the expected outcome of this research work will be a guide to a purpose-built center for performing arts that is indigenous through architectural approach for optimizing and enhancing spatial configuration and circulation in public space such as a center for performing art.

Keywords; space, performing arts, design element, architecture, spatial configuration

1.0 INTRODUCTION

A center for performing arts for any city serves many function and as such should be well designed to meet user needs and building specification, many factors are to be considered in the design of performance space for optimal effectiveness and efficiency of the facility hence the need for this research. Due to the high rise in various art forms and inadequacy of clearly defined performing spaces for arts in the city of Port Harcourt, this research would lay the foundation for the various factors that are to be considered for the optimization of spatial configuration and circulation in a performing art center. Space is one of the fundamental design element in architecture, since architecture is about the creation and disposition of space and forms in relation to its users. In architecture, space is a special form of free space which the architect creates by giving it form, shape and scale, hence “Space is a prime material in the designer’s palette and an essential element in interior design” (Ching D. K. 1943, page 10). Performing art spaces are spaces designed to house specific activities such as dance, music, theatre and other art forms and careful consideration must be given to the design of such spaces. The spatial configuration of performance space is key element in optimization of other design elements in relation to space for good user experience. The primary factors determined in the optimization of space for specific performance purpose include the following

- Spatial analysis
- Design elements (Form, light, texture, etc.)
- Layout/ configuration
- Design components

The various factors define some optimization properties that results in good control, connectivity and integration, as well as some spatial qualities like hierarchy, symmetry and perspective when put together would result in different spatial-display which in turn defines the extent of functionality and comfort in performance spaces.

2.0 AIM AND OBJECTIVES

The aim of this research is to use architectural approach to solve real life problems of spatial configuration and circulation and other elements associated with the optimization of spatial configuration and design such as sound production, light interference, etc. in performance spaces.

The objectives of this research include the following

- To provide parameters that enable effective design in performing art spaces for better performances and experience
- To improve research in related areas of performing arts hence create a socio-cultural environment for learning.
- Promote the need for performing arts center to enhance creativity and active participation in performance arts

3.0 RESEARCH METHODOLOGY

For the purpose of this research, the primary method deployed for the collection of data would be qualitative analysis which includes primarily research methods such as existing case studies, existing literature on the subject from other researchers through their writings in books, journals, articles, published and unpublished literatures, textbooks and other sources all relevant to the subject matter and the specific area of study. The collated raw information will be reviewed and used as the basis for analysis and guide on this research

4.0 DISCUSSION AND FINDINGS

The various factors that determine the comfort level in optimization of space for performance purpose would be discussed in this section

4.1 Spatial Analysis;

The categorization of spaces depends on the use and requirement from the brief, the concept of spatial analysis in performance space includes the spatial requirements and specific use. For a good organization, planning and proper integration of spaces to be achieved, it is necessary to understand the nature and basic workings of the various spaces and facilities that make up a

performing art center. This happens to be the first step before the articulation of spaces would proceed.

4.1.1 Spatial Requirement

There are 3 major areas of any building: the private, the public and semi-public areas. The spaces that fall under these 3 areas in a performing art center include:

- The Entrance area (Entrance Porch, Entrance Hall/Concourse, Reception/enquiries/ticketing, Entrance lobby/waiting area, Visitors conveniences, Security booths)
- The Administrative area (Personnel department, Housekeeping/maintenance department, Accounting department, records. Conferences, Storage units, Administrative officer, General officer, Account offices, Officers of the Heads of Departments/Section, kitchen/Stores)
- The Performing Arts Area (theatre/ auditorium, Amphitheatre, Rehearsal rooms, Dressing rooms, Waiting rooms, Scenery store, Changing rooms, Costume shop, Laundry, Workrooms Conference room, backstage, production unit, halls,).
- Support Facilities and Services. (Plaza, commercial area, exhibition area, Cafeteria, Reference library, Digital library/cyber café, Security offices, Archives)

4.1.2 Spatial Type/Use

This is dependent primarily on the brief hence due consideration is given to the users of the facility first and the spatial requirement. The types of performance spaces to be designed for include

- Music auditorium
- Dance auditorium
- Drama auditorium
- Multipurpose auditorium
- Outdoor arena

Other factors affecting the optimization of the various performing arts spaces include the size of the space, the interior design of the space, the volume as well as the form and layout design.

4.2 Design Elements;

Space as an element of any architectural design does not exist in isolation, therefore Various elements, features and parameters that define a space would be reviewed in relation to one another and how their effect on the optimization and enhancement of space results in clear sight line, good hearing, ambience, circulation and comfort in a performing art center. The various design elements that affect the optimization of performance space include form, light, line, texture, pattern and color.

Form is one of the space defining factor because it provides boundaries, defines layout and depth. Spaces for performance use are different from other spaces fur residential and commercial use hence it is required the performance spaces have good and effective form that support and enhance the performance as well as the overall facility. For good optimization, it is required a minimum of $3m^3$ for an effective depth in performance space.

Lines provide depth as well as space, a good sight line creates good connectivity between performers and audience in relation to the overall facility with respect to circulation and performance, the use of aisle, walkways in and around the facility promote good line of sight hence it is imperative that the lines are clearly defined in any performance space.

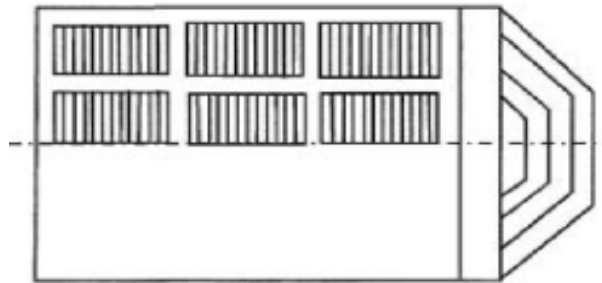
The texture of a performance space has great effect on the quality of the performance, a bad texture creates a bad user experience and vice versa. The types of materials used and the preferred finish defines the texture of a space hence it is advisable to use sound absorbent materials and ecofriendly finishes in the interior of performance spaces

Color is one primary element of any space. Color is important not just because it creates a mood in a space, but because it has the power to make a space feel comfortable and habitable making it feel larger, lighter, or cozier. Of course, it's vital that the color selected complements the space use, in performance spaces, colors amplify visuals because they light up a space thereby giving good user experience and a good blend of colors in performance space also creates comfort. It is best advised that tertiary colors are best as opposed to primary colors for the interior of performance spaces.

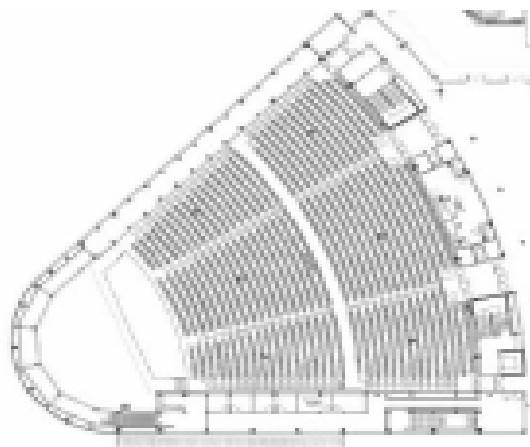
4.3 Layout/Configuration;

The spatial arrangement of any performance space is largely affected by the form and type of performance, there are various layout and each has advantage over the other, the various layout that enhance good performance and performance spaces include

- Rectangular shaped auditoria; the rectangular hall can be built to accommodate both small and large audiences. However, these halls are easy to design with aisle considerations and controlled movement patterns.

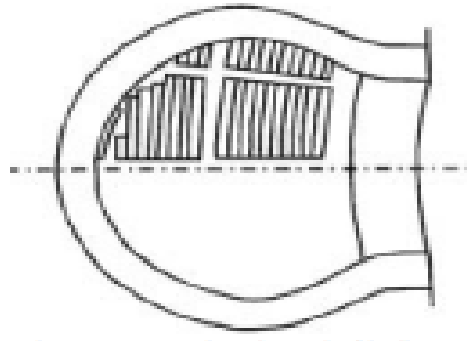


- Fan shaped auditoria; these hall layout is best for good sightlines for the audience because of its wide capacity to accommodate a larger audience within closer range from the focal point (stage) due to its spread. It maximizes the capacity for a relatively short distance to the back of the stage while conserving an acceptable angle of view (sightlines) as its primary advantage over other layout hence it is often used as multi-purpose halls, destined to host operas and concerts. A disadvantage in terms of early time delay gap is the distance from the side walls.



- Horseshoe shaped auditoria; these structural layout have been in use as the preferred design for opera houses and concert halls because it provides good visibility, a sense of

proximity to the performing platform and a greater sense of intimacy. Nearly all concert horseshoe shaped halls have balconies, which are designed to accommodate additional seating capacity within a smaller auditorium volume. A large number of boxes and rich interior decor contribute to sound dispersion, which conceals possible acoustic defects and ensures the proper ratio of direct to reverberated sound.



Other layout for stage design include

- Thrust
- Arena
- Proscenium
- End stage



4.4 Design Components;

These are the distinguishing features or unique component parts that form any building or structures. A building includes the structure itself and the non-structural components attached to and supported by the structure. For a basic structure, the various components that makes up for a good design are the floors, walls and roofs make up these features and components. The design components of any performance space should be such that it takes care of problems that may arise that will cause discomfort and be sustainable and user friendly. The choice of the specific design component should be such that the components are ecofriendly, sustainable, available and should be designed and finished to contain and absorb sound, regulate airflow and circulation, be flexible while also repelling heat and enhancing spatial configuration.

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This research has clearly shown the benefits of a center for performing arts in any city. A well designed facility would bridge both social and international gap through the various theatrical activities (either local or international art forms). Hence the various factors that enhance good and effective spatial configuration must be considered in the design of a performing art center in order to enhance the quality of performance spaces for the users as well as create good user experience.

5.2 Recommendation

Architects, designers and other specialist in the design team need to recognize the fact that spaces used for either specific or multipurpose use should be designed to codes and standards that apply to the specific use and building type while keeping in view the environmental conditions that are prevalent. Hence it is recommended that proper calculation and attention is given to the minimum standard of the various factors involved in the optimization and enhancement of performing spaces such space size, space volume, seat layout, stage design choice, acoustic parameters, lightning angles, circulation, as well as other factors such as choice of material and finishes, building form.

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