EVALUATING THE EFFECTS OF BUILT FORM PRINCIPLES ON USER EXPERIENCE IN THE DESIGN OF PERFORMING ARTS CENTRE, JOS.

BY

DONALD OGA, GAMBO

DEPARTMENT OF ARCHITECTURE,
AHMADU BELLO UNIVERSITY, ZARIA
NIGERIA

MAY, 2015.

EVALUATING THE EFFECTS OF BUILT FORM PRINCIPLES ON USER EXPERIENCE IN THE DESIGN OF A PERFORMING ARTS CENTRE, JOS.

`

BY

DONALD OGA GAMBO, B.Sc. Arch (ABU) 2011
MSc/Env-Design/ 4667/ 2011-2012

A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
AHMADU BELLO UNIVERSITY, ZARIA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF
MASTERS OF SCIENCE IN ARCHITECTURE

DEPARTMENT OF ARCHITECTURE,
FACULTY OF ENVIRONMENTAL DESIGN
AHMADU BELLO UNIVERSITY, ZARIA.
NIGERIA.

MAY, 2015

DECLARATION

I declare that the work in the thesis entitled 'EVALUATING THE EFFECTS OF BUILT FORM PRINCIPLES ON USER EXPERIENCE IN THE DESIGN OF A PERFORMING ARTS CENTRE, JOS' has been performed by me in the Department of Architecture. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at this or any other Institution.

Donald, Oga Gambo

_____	_____	_____
Name of student	**Signature**	**Date**

CERTIFICATION

This thesis entitled "EVALUATING THE EFFECTS OF BUILT FORM PRINCIPLES ON USER EXPERIENCE IN THE DESIGN OF A PERFORMING ARTS CENTRE, JOS" by DONALD OGA, GAMBO meets the regulations governing the award of the degree of Master of Science in Architecture of Ahmadu Bello University, Zaria, and is approved for its' contribution to knowledge and literary presentation.

Arc. A.E.O Eneh	_____	_____
Chairman Supervisory committee	Signature	Date
Dr. S.N. Oluigbo	_____	_____
Member Supervisory committee	Signature	Date
Dr. M.D. Ahmed	_____	_____
Head of Department	Signature	Date
Prof. H.A. Zoaka	_____	_____
Dean, School of Post Graduate Studies	Signature	Date

DEDICATION

I wish to dedicate this research to God and to all lovers of architecture.

ACKNOWLEDGEMENT

I wish to express my profound gratitude to God almighty for seeing me through the cause of this study.

Secondly, to all those that have contributed in one way or the other to the successful completion of this thesis, most especially my supervisors Arc. A. E. O. Eneh and Dr. S. N. Oluigbo with other members of the supervisory group.

My gratitude also goes to the lecturers and staffs of the department of architecture for their various contributions at various intervals.

My profound gratitude also goes to my mum and siblings for their words of encouragements, thank you so much.

Many thanks to all the wardens from the various case study locations who attended to me and gave me their maximum cooperation.

Finally, I'll like to extend my gratitude to my friends, Adejoh, Simon, Francis, Deborah, Chinnan, Samson, Prof. Wong, Prof Kantiok, Mr Martins Abeshi, Unc. Daniel, Mrs Timkuk, Alhaji (Mr) Ubabu Mohammed, Mr Mohammed, Auta, Sir Peter, Jerry Moses, Oloche, Saratu, Ataitiya, Oga Steevo, Funto, Jonah, Ooche, Stanley, Eshua, Memshima, Deborah Mshelia, Gabriel, Aminu, Doman, Albert, Rwang Tok Pam, Victor Kaka, U07AT colleagues, M.Sc.Env-Des/2011-2012 colleagues, Society for Architecture Students (SAS), Fellowship of Catholic Post-Graduate students (FCPS), C Cube, amongst others. You guys are too many to mention.

My thanks again, God Bless You All.

ABSTRACT

The growing trend in the entertainment industry in recent times has shown high level of developments and is evident from the developments seen in the music industry and Nollywood.

However, recent research into theatres in Nigeria have shown poor facilities and dilapidated state of the centre for the arts, which has given rise to situations where users are uncomfortable thereby, making them express their discomfort by running side commentaries during productions and reduction in user loyalty to the existing arts centres.

To this end, the research seeks to evaluate the effect of built form principles on the user experience in performing arts centres. Thus, a qualitative method of research that involves the use of review from relevant literature, questionnaires, interviews and case studies are used to evaluate the users experience in performing art centres.

The results from the study reveals the impact of built form principles on user experience through a sequential flow of adjourning spaces and thus, reveals the user experience points in performing arts centres to be arrival experience points, social/ shared experience points and theatrical experience points.

Finally, a framework was developed from the obtained results to aid future designs and informed decisions for the design of performing arts centres which was demonstrated in the design of a performing arts centre Jos.

Table of Contents

COVER PAGE. I

TITLE PAGE. III

DECLARATION IV

CERTIFICATION V

DEDICATION VI

ACKNOWLEDGEMENT VII

ABSTRACT VIII

TABLE OF CONTENTS IX

LIST OF TABLES XII

LIST OF FIGURES XIII

LIST OF PLATES XV

LIST OF APPENDICES XVI

ABBREVIATIONS AND DEFINITIONS XVI

CHAPTER ONE 1

1.0 INTRODUCTION 1

1.1 BACKGROUND OF STUDY 1
1.2 PROBLEM STATEMENT 2
1.3 JUSTIFICATION 3
1.4 AIM AND OBJECTIVES 4
1.4.1 Aim 4
1.4.2 Objectives 4
1.5 RESEARCH QUESTIONS 5
1.6 SCOPE OF THE STUDY 5

2.0 LITERATURE REVIEW 6

2.1 USER EXPERIENCE 6
2.1.1 User Experience Design 7
2.1.2 User Experience Design Principles 12
2.1.4 Challenges of User Experience Design in Buildings 13
2.1.5 Creating User Experience 15
2.1.6 User Experience Evaluation Technique 16
2.2 BUILT FORM PRINCIPLES 17
2.2.1 Building Form 21
2.2.2 Building Form Types 22
2.2.3 Sculptural Architectural Form 26
2.2.4 Impact of the Built Form on User Experience 28
2.3 THE ARCHITECTURE OF PERFORMING ARTS CENTRES 29

2.3.2 Trends in the Performing Arts 30
2.4 BUILDING FORM AND THE CREATION OF EXPERIENCE IN PERFORMING ARTS CENTRES 31
2.4.1 New Space Conception and Users of Performing Arts Centre 32
2.4.2 Creating Experience in Performing Arts Centres 36
2.4.3 Theatre Space and Character 38
2.5 SUMMARY OF LITERATURE REVIEW 43

3.0 RESEARCH METHODOLOGY 45

3.1 BACKGROUND 45
3.2 RESEARCH METHOD 45
3.3 CASE STUDY SELECTION CRITERIA 46
3.4 INSTRUMENT OF DATA COLLECTION 47
3.5 VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS 50
3.6 PROCEDURE OF DATA COLLECTION 51
3.7 VARIABLE OF STUDY 51
3.8 DATA ANALYSIS 52
3.9 THEORETICAL FRAMEWORK 53

4.0 FINDINGS AND DISCUSSION 54

4.1 FINDINGS AT NATIONAL THEATRE, LAGOS 54
4.1.1 Background 54
4.1.2 Description/ Room Characteristics 55
4.1.3 Findings from Visual Survey 60
4.2 FINDINGS AT CYPRIAN EKWENSI CENTRE FOR ART AND CULTURE 64
4.2.1 Background 64
4.2.2 Description/ Room Characteristics 65
4.2.3 Findings from Visual Survey 67
4.3 FINDINGS AT U.K. BELLO ARTS THEATRE, MINNA 70
4.3.1 Background 70
4.3.2 Description/ Room Characteristics 71
4.3.3 Findings from Visual Survey 73
4.4 SUMMARY OF CASE STUDY FINDINGS 75
4.5 FINDINGS FROM INTERVIEW 76
4.6 FINDINGS FROM QUESTIONNAIRE SURVEY 77
4.7 DISCUSSIONS 81
4.7.1 Research question 1: 81
4.7.2 Research question 2: 83
4.7.3 Research question 3: 83
4.8 DEVELOPMENT OF DESIGN FRAMEWORK FOR USER EXPERIENCE IN PERFORMING ARTS CENTRE 84
4.8.1 Categories on the experience points 85
4.7.2 Categories on the scale side 86

5.0 DESIGN CRITERIA 88

5.1 SITE LOCATION 88
5.2 CLIMATIC DATA OF SITE 88
5.3 SITE SELECTION CRITERIA 90
5.3.1 Site One 90
5.3.2 Site Two 91
5.3.3 Site Three 91
5.4 THE PROPOSED SITE 92
5.5 FEATURES PRESENT ON SITE 93
6.1 BACKGROUND 97
6.2 DESIGN PROPOSAL AND DESIGN BRIEF 97
6.2.1 Design Proposal 97
6.2.1 Design Brief 97
6.3 ARCHITECTURAL DESIGN 98
6.3.1 Schedule of Accommodation 98
6.3.2 Functional Flow Diagram 101
6.3.3 Design Concept 102
6.3.4 Site Zoning 103
6.3.5 Design Considerations 105
6.4.7 Site Planning 119
6.4.8 Floor Plans 121
6.4.9 Elevations 123
6.4.10 Building Materials 124
6.5 APPLICATION OF FRAMEWORK ON PROPOSED DESIGN 126

7.0 CONCLUSION AND RECOMENDATION 127

7.1 SUMMARY OF RESEARCH FINDINGS 127
7.1.1 Techniques of measuring user experience 127
7.1.2 The extent to which built form principles affect user experience in performinng arts centres 127
7.1.3 Key contemporary developments in the design of performing arts centres 128
7.2 CONTRIBUTION TO KNOWLEDGE 128
7.3 CONCLUSIONS 129
7.4 RECOMMENDATIONS 129

REFERENCES 130

APPENDICES 135

List of Tables

Table 2.1: Basic human needs experience and architectural solutions 10
Table 2.2: Environmental factors that enhance sense of place experience..... 11
Table 2.3: User research methods for qualitative and quantitative research type 16
Table 2.5:Ching's Architectural system 28
Table 4. 1:User experience points in National arts theatre.....61
Table 4. 2: Responsive design to built form principles 62
Table 4. 3: User experience points in centre for art and culture, Abuja 67
Table 4. 4: Responsive design to built form principles 68
Table 4. 5: User experience points in U.K. Bello arts theatre 73
Table 4. 6:Responsive design to built form principles 73
Table 4. 7: Summary of findings..... 75
Table 4. 8: Summary of interview survey..... 77
Table 4. 9: Data of users' gender 77
Table 4. 10: Data on age group 77
Table 4. 11: Data of marital status 78
Table 4. 12: Data of profession 78
Table 4. 13: Data of area of residency..... 78
Table 4. 14: Data of user visitation to performing arts centre 79
Table 4. 15: Data for users variations to performing arts centre activities..... 79
Table 4. 16: Data for user's motivation on performing arts centre activities 79
Table 4. 17: Data for hindrances to attending performing arts centre activities..... 80
Table 4. 18: Data of user's participation to performing arts centre activities..... 80
Table 4. 19: Data on users' experience while coming to the performing arts centre.. 80
Table 4. 20: Data for user's judgement of performing arts centre 81
Table 4. 21: Discussion of questionnaire finding..... 82
Table 4. 22: Framework for performing art centre design..... 84
Table 6. 1: Schedule of accommodation 98
Table 6. 2: Evacuation time for audience 117

List of Figures

Figure 2.1 : User needs in building foyers 6
Figure 2.2: An illustration of who the audience might be 9
Figure 2.3: An illustration of what the user may care about 9
Figure 2.4: An illustration of user thought about a given information 9
Figure 2.5:Morville's user experience honeycomb 12
Figure 2.6: Audience experience framework 13
Figure 2.7: Underlying experience of users 14
Figure 2.8: Axis line 18
Figure 2.9:Chuch plan by AntoniFilarete 18
Figure 2.10: Cathedral at Florenct 19
Figure 2.11: Datum line connecting circle spaces 19
Figure 2.12: Guachiminton complex 20
Figure 2.13:North Indian Cella 20
Figure 2.14: Irregular form, Philharmonic hall 25
Figure 2.15: Regular composition of regular form in the Coonley play house. 25
Figure 2.16: Irregular composition of regular form, Katsura imperial villa 26
Figure 2.17: Irregular form with a regular field 26
Figure 2.18: Regular form with an irregular composition 26
Figure 2.21: Sydney Opera House 27
Figure 2.20: Functional linkage for performing arts. 33
Figure 2.21: Relationship between facilities 35
Figure 2.22: An illustration of interactions that occur on foyer spaces 35
Figure 2.23: Different types of stages 37
Figure 3. 1: theoretical framework 53
Figure 4.1: 1st floor plan 55
Figure 4.2: Site plan showing various drop-offs 56
Figure 4.3: Section through the National art theatre main bowl. 61
Figure 4.4: Ground floor 65
Figure 4.5: Floor plan 71
Figure 4.10: Design framework 87
Figure 5.1: Map of Nigeria 88
Figure 5.2: Temperature data for Jos 89
Figure 5.3: Temperature data for Jos 89
Figure 5.4: Temperature data for Jos 89
Figure 5.5: Site location map 92
Figure 5.6: Site Analysis 94
Figure 5.7: Site features analysis 95
Figure 5.8: Climatic analysis 95
Figure 5.9: Solar analysis 96
Figure 5.10: View analysis 96
Figure 6.1: Functional flow diagram 102
Figure 6.2: Site development concept 102

Figure 6.3: Building form concept 103
Figure 6.4: Site zoning 104
Figure 6. 5: Site planning consideration 106
Figure 6.6: Minimum dimension for parking lots 107
Figure 6.7: Parking for bicycles and motor-cycles..... 107
Figure 6.8: Plan of drop-off zone 108
Figure 6. 9: Use of signage for way finding within the arts centre. 108
Figure 6. 10: Circulation flow in the performing arts theatre 109
Figure 6. 11: Thrust stage and auditorium seating in the performing arts theatre 110
Figure 6. 12: Vomitories for audience circulation 111
Figure 6.13: Row seating arrangement..... 111
Figure 6.14: Seat measurement 112
Figure 6.15: Wheelchair seating arrangement 113
Figure 6.16: Retractable seating..... 113
Figure 6.17: Spectators' viewing angle to the stage..... 114
Figure 6.18: Speakers' viewing angle to the seats. 114
Figure 6.19: Space proportion within a typical traditional auditorium. 114
Figure 6.20: Sight lines of typical spectators..... 115
Figure 6.21: Constant height of risers. 115
Figure 6. 22: Ceiling shape and sound reflection within the auditorium 116
Figure 6. 23: Exit point within the auditorium..... 117
Figure 6. 24: Information desk..... 118
Figure 6.25: Wheelchair friendly wash room 118
Figure 6.26: Arrangements of tables and sits in food courts. 119
Figure 6.27: Site plan 120
Figure 6.28: Ground floor 122
Figure 6.29: 1st floor plan 122
Figure 6.30: 2nd floor 123
Figure 6.31: Elevations 124
Figure 6.32: 3 dimensional drawings 124

List of Plates

Plate I: Types of form 23
Plate II: a. Sculptural form, b. Architectural form and c. Structural form 24
Plate III: Exterior Amphitheatre 39
Plate IV: View from Lake Front 40
Plate V: Lobbies for social/ shared experience 40
Plate VI: Main auditorium ……...41
Plate VII: Tobin centre for the performing arts 41
Plate VIII: Entrance point from water front..... 42
Plate IX: Circulation lobby 42
Plate X: Main Auditorium ……...43
Plate XI: National Art Theatre 54
Plate XII: Seating arrangement in the main hall viewed from the side..... 56
Plate XIII : Cinema hall 57
Plate XIV: Conference/banquette hall..... 57
Plate XV: Proscenium stage in the exhibition hall..... 58
Plate XVI: Image of the Bar 58
Plate XVII: V.I.P lounge 59
Plate XVIII: Roof garden 59
Plate XIX: Distribution board in the substation..... 60
Plate XX: Layout of National theatre..... 63
Plate XXI: Deterioration on a backstage lobby..... 63
Plate XXII: [a]Daylighting[b]landscape.....63
Plate XXIII: Cyprian Ekwensi centre for art and culture 64
Plate XXIV: Entrance to the hall..... 65
Plate XXV: Auditorium..... 66
Plate XXVI: Seminar room..... 66
Plate XXVII: layout of Centre for arts and culture, Abuja..... 69
Plate XXVIII: [a] Technicians office, [b] window hood and [c]landscape work 69
Plate XXIX: Local art painting on walls 69
Plate XXX: U.K. Bello arts theatre, Minna 70
Plate XXXI: Entrance to U.K. Bello theatre..... 71
Plate XXXII: Auditorium 72
Plate XXXIII: Gymnasium 72
Plate XXXIV: Site layout of U.K. Bello arts theatre 74
Plate XXXV: Daylighting in craft shop..... 75
Plate XXXVI: Shaded walk path 75
Plate LXVII: The selected sites..... 90

List of Appendices

Appendix I: Checklist for visual survey 135
Appendix II: Interview questions 136
Appendix III: Questionnaire 136
Appendix IV: Letter of introduction 140
Appendix V: Site plan 141
Appendix VI: Site sections 141
Appendix VII: Site Elevations 141
Appendix VIII: Floor plans (Admin/exhibition hall) 142
Appendix IX: Roof plan (Admin/exhibition hall) 143
Appendix X: Section and elevation (Admin/exhibition hall) 143
Appendix XI: Floor plan (Banquette/multipurpose hall) 143
Appendix XII: Roof plan (Banquette /multipurpose hall) 144
Appendix XIII: Section and elevation (Banquette /multipurpose hall) 144
Appendix XIV: Floor plans (Main performing arts complex) 144
Appendix XV: Roof plan (Main performing arts complex) 145
Appendix XVI: Sections (Main performing arts complex) 145
Appendix XVII: Elevations (Main performing arts complex) 146
Appendix XVIII: Floor plan (Rehearsal theatre) 146
Appendix XIX: Elevation (Rehearsal theatre) 146
Appendix XX: Floor plan (Outdoor complex) 146
Appendix XXI: Section and elevations (Outdoor complex) 147
Appendix XXII: Floor plan (Gate house) 147
Appendix XXIII: Section and elevations (Gate house) 147
Appendix XXIV: 3 dimensional images of performing arts centre 147
Appendix XXV: Final seminar images 148

Abbreviations and Definitions

UNESCO	- United Nations Educational, Scientific and Cultural Organisation
TMA	-Theoretical Management Association
PMAN	-Performing Musician Employers' Association of Nigeria
SPAN	-Society for the Performing Arts in Nigeria
NMA	-Nigerian Metreological Agency

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of study

The growing trend in the entertainment industry according to Ayakoroma (2012) has shown high level of developments in recent times and this is evident in the large development seen in the music industry and Nollywood. Hence the need to provide entertainment centres that is suitable and efficient for these activities, in this case a performing art centre.

However, with regards to the above statement, different names have been used to describe theatre as such; Oni (2004) describes some of them as university theatres, amateur/semi-professional theatres and professional theatres. More so, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2012) have also revealed that the performing arts activities range from vocal and instrumental music, traditional music, dance, puppetry and theatre in which they all include numeral cultural expressions that reflect human creativity and cultural heritage.

Oni, (2004) however examines how venue and facilities affect the art and practice of theatre, focusing majorly on "design and technology" in set design, with some mention made of costumes, lighting, stage management and technical direction. More so, Nwamuo in Ayakoroma, (2012) speculates that a good number of theatres in Nigeria have very poor facilities which gives rise to situations where members of the audience are uncomfortable making them to express their discomfort by running side commentaries on shows thereby disturbing the on-going production. As such, Sultz in

McCabe (2012) considers the user experience of a space to how people navigate it individually, how it affects them and how they use it.

Poldma (2010) in a study has revealed that users experience shape their environment, which in turn creates new, hopefully richer experiences for them. More so, Baharin and Morrison (2006) have also speculated that since interaction design has proven to be beneficial, involving the audience in the creative process of developing an interactive art piece can make the artist improve the art in general and the audience experience in particular.

And so, Locton (2011) reveals that when designing and constructing environments in which people live and work, the designer should be involved in influencing human behaviour which may be intended towards providing efficient user experience in the design.

1.2 Problem Statement

While buildings are important for shelter and recreation to every individual, the user experience remains one of the primary determinants influencing the built environment as such, the depreciating status and poor consideration given to facilities in our performing arts centres can be said to have a strong negative impact on the users that patronize such facilities there by leading to low and poor user experience in such centres.

The above statement is evident in a study by Doxa (2001) whose analysis reveals evidence suggesting that spatial layout and distribution of facilities modulate pattern of use, co-awareness, co-presence and potential for interaction among users, thereby generating different modes of socialization and transmission of culture. Eni (2013)

also reveals that any design should work or function for its purpose as such, if a theatre has poor sight lines, poor acoustics and insufficient means of entry and egress, it obviously does not work for its purpose, no matter how beautifully it might be decorated.

In addition to the paragraph above, the enormous variations in theatre performances as cited by Ayokoroma (2012) reveals in Eni (2013) that there is a steady growth in the gap between what is experienced as theatre in western world and Nigeria due to the growing gap in the advancement and availability of technology and performance and so, concludes that unless recommended measures are taking to bridge the gap, Nigeria will find it had to catch-up with global performances trends. More so, Doxa (2001) in a study reveals that arts are becoming more accessible to a wider public as such, buildings for performing arts should undergo a process of re-evaluation and change to their cultural agenda, aiming for large numbers and diverse groups of users.

To this end, addressing the problem poses a design challenge of designing for user experience through the use of built form or ordering principles.

1.3 Justification

In view of the variations now seen in theatre arts performances, there is every need for such a facility than can accommodate the activities of contemporary arts, thereby instilling a sense of positive experience to the users. Eni (2013) reveals that there is a steady growth in the gap between what is experienced as theatre in western world and Nigeria due to the growing gap in the advancement and availability of technology and performance and so, recommends that measures be taking to bridge the gap if so, Nigeria will find it had to catch-up with global performances trends.

To this end, the outcome of this study provides insights as to how a performing art centre within the Jos city metropolis will affect the community thereby accommodating the way of life of the people, their traditional performances, music, and drama, thus providing a satisfactory user experience.

The study will also be of immense value to architects and designers in the area of user experience requirements in term of spatial configuration of theatre spaces. Also, it will act as a case study and aid in creating awareness of importance of quality experience and the exploration thereof.

Finally, the study further enhances the user patronage of performing art theatres through enhanced user experience.

1.4 Aim and Objectives

1.4.1 Aim

The research is aimed at evaluating the effects of built form principles on user experience in the design of a performing art centre thereby, enhancing people's lives through artistic experiences and increasing the loyalty and patronage of such facility.

This aim will be achieved through the following objectives:

1.4.2 Objectives

i. To review the concept of user experience.
ii. To examine and study principles guiding the built form environment.
iii. To establish the relationship between built form principles and user experience in performing arts centres.
iv. To develop a framework that will be used by architects and other researchers for the design of a performing arts centre.

v. To demonstrate the outcome of this study in a proposed Performance Art Centre, Jos.

1.5 Research Questions

The questions the research tends to address are:

1. How can user experience be measured in performing arts centres?
2. To what extent can built form principles affect the user experience in performing arts centres?
3. What are the key contemporary developments in design of architecture for theatre art performances?

1.6 Scope of the Study

The scope of this study is geared towards evaluating the effects of various built form principles on user experience in performing arts centre.

The research will mostly depend on the aspect of the built form principles that makes it a viable tool for enhancing user experience while taking note of the character of spaces in the performing arts centre and also for contemporary art performances.

There shall be exploratory research of relevant literature and several research methods and comparative analysis of data that will be gotten from some selected case studies of which the outcome of the result will be demonstrated on a proposed performing arts centre in order that the research is authenticated.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 User Experience

Gube (2010) defines the user experience as how a person feels when interfacing with a system, in this case a building. In addition to the definition, Garrett (2014) further reveals that the user experience focuses on having a deep understanding of users, what they need, what the value, their abilities and also their limitation taking into account the goals and objectives of the managing body.

Thus, Page and Parry (2012) in a study went further to reveal that user experience may also be centred on a range of user needs, which is illustrated in figure 2.1 below.

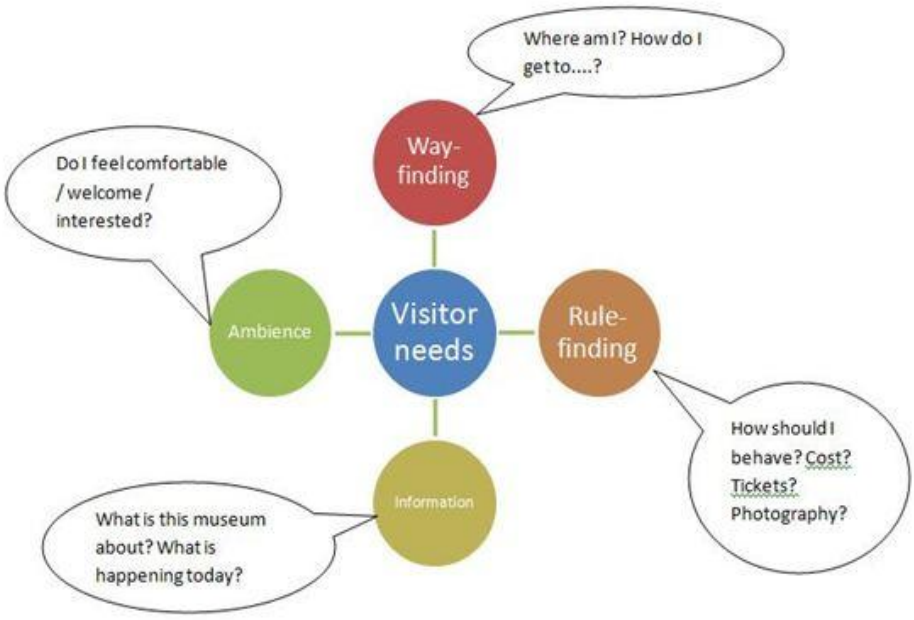


Figure 2.1 : User needs in building foyers
Source: Page and Parry (2012)

In addition, Reiss (2011) defines user experience as the sum of series of interactions between people, devices and events. Thus, Reiss went further group the type of interactions in three (3) namely:

1. Active (things we control)
2. Passive (things we don't control)
3. Secondary (things that have indirect influence

And finally, *Roto et al* (2011) refers to user experience as a term used synonymously with usability, user interface, interaction experience, interaction design, general experience or as an umbrella term incorporating all or many of these concepts, thus defines user experience as a field that deals with studying, designing for and evaluating the experiences that people have, through the use of a system.

2.1.1 User Experience Design

Reiss (2011) defines user experience designs as the conscious act of coordinating interactions, acknowledging interactions and reducing negative interactions.

Roto et al (2011), however summarises user experience design to suit the following:

1. Positioning the user as a central concern in the design process
2. Identifying the aspects of the design that are important to the target user group
3. Developing the design iteratively and inviting users participation
4. Collecting evidence of user-specific factors to assess a design.

Finally, Brown and Ratzkin (2011), reveal that the principles of experience however when translated to the arts, suggests that users have a total experience much larger than the arts program itself, thereby building stronger bonds of customer loyalty when the totality of the experience is well managed and not just the artistic product.

However, in order to explore how a user will experience an environment, Darragh (2012) reveals in a study that one requires consideration of how to approach the design as well as what design tools become important hence, Darragh lists two (2) separate areas of study that contributes to an overall enhanced user experience which are:

1. User informed research and
2. Environmental, sensorial approach

Tyrer (2010) also speculates in a study that when and if the architect chooses to address the users, the first step is to understand the people that the design is meant for. Thus, Cuff in Tyrer (2010. p21) in trying to decipher how the architects understands their users concludes that most architects believe people need to be linked to nature, weather, and natural light. Finally, Cuff in Tyrer (2010) reveals that spatial order, clarity and organisation can combat the frequently perceived chaos in buildings.

2.1.1.1 Understanding the user

According to Darragh (2012), a person's everyday experience of space is largely dependent on many individual factors such as, cultural and social context, as well as their current emotional status, as such architecture should focus primarily on understanding who the users will be and how they might interact, use or even understand the characteristics of a space.

A study by Wodtke (2013) further reveals that in getting to understand the user, the architect ought to know the following about the user or audience.

1. Who are they
2. What do they care about
3. How do they think of the information and content

Figure 2.2-figure 2.4 shows illustrations of how a designer can get to understand the users he is designing for.

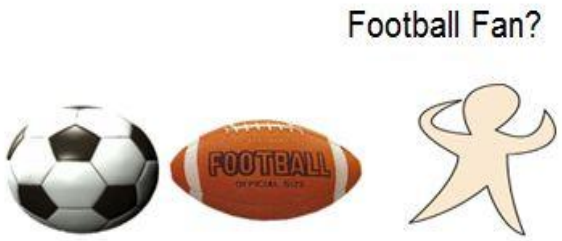


Figure 2.2: An illustration of who the audience might be
Source: Wodtke (2013)



Figure 2.3: An illustration of what the user may care about
Source: Wodtke (2013)



Figure 2.4: An illustration of user thought about a given information
Source: Wodtke (2013)

None the less, to further understand who the user is, Boyden in Darragh (2012, p15) distinguishes between "survival needs" and "well-being" needs of users in which,

Boyden reveals that failure to satisfy the well-being needs produces the "gray life" of psychological maladjustment and stress related illness. Thus, Darragh (2012) reveals relevant well-being needs that are directly relevant to building designs. These needs are elaborated in the table 2.1.

Table 2.1. Basic human needs experience and architectural solutions
Source: Darragh (2012)

Basic human needs for positive experience	Concepts to help fulfil basic needs	Architectural possibilities
SENSE OF CONTROL	Being able to control thermal comfort, noise, and lighting.	Operable windows, localised thermostats, fans, task lighting, daylighting.
CHOICES	Multiple settings for individual and group activity, alone, together, inside, outside.	Fitting workspaces in different parts of the building
BELONGING	Spaces designated to certain groups, space and team identity.	Smaller work zone areas, separated but not isolated, support informal conversation
PRIVACY	Ability to have temporary privacy, quiet	Small rooms with clgs. And doors to be use temporarily
PROXIMITY TO NATURE	Work spaces have immediate access to outdoor areas that are planted and have views.	Create outdoor shaded spaces that can connect separate enclosed spaces
PROTECTION	Spaces that are protected from harsh sunlight, wind, rain.	Areas of enclosure during harsh conditions
VARIETY	Variation in colour, pattern, temperature	Daylight, shadows, plantings, filtered experience of weather.

2.1.1.2 Environmental approach to user experience design

Darragh (2012) revealed in a study that appropriate design responses to regional and local climate conditions is one way to create distinctive designs, and establish a sense of place for users to experience. Table 2.2 shows a list of environmental factors that can be manipulated in buildings for the enhancement of user experience and sense of place.

Table 2.2. Environmental factors that enhance sense of place experience Source: Darragh (2012)

Natural forces in tropical climate	Concepts to mitigate	Architectural possibilities
Air movement - Cross ventilation - Stack ventilation	Do not block airflow with interior walls or obstructions, create variable ceiling heights and multiple story spaces	Operable windows, openings on at least 2 facades, sizing of inlets and outlets.
Daylight	Spaces for working need adequate amount of daylighting	Thin light of working space to allow daylight to maximum work zones.
Shade	Provide shade on all exterior walls and outdoor spaces, walkways, minimize areas open to sky	Vegetation walls, roof over-hangs, walk ways that connect buildings
Orientation	Orient buildings east/west with long sides facing north/south for best light and least heat gain.	Variation of envelope solutions depending on direction of sun and wind
Views	Create openings that face favourable views	Framed views of scenery, bring nature inside
Buffer zones	Spaces that are between inside and outside mitigate effects of harsh conditions such as solar radiation.	Walkways, porches, vegetation walls, lanai spaces, pergola, buffer zones
Filter	Allowing the good weather to be experienced while protected from bad	Large overhangs, plantings, operable windows, enclosed

In addition, Edward in Munrai (2012.p10) further reveals that in designing for sense of place, the community (history, culture and people) is to be considered and added that there are three (3) contexts that must be considered when designing to achieve a sense of place.

1. The environment (climate and land)
2. The transportation system
3. The community (history, culture and people)

Eni (2013), further reveals that several factors go to underline a design aesthetic as belonging to a particular country, thus a careful analysis and identification of these factors and elements is relevant in determining its place of origin.

2.1.2 User Experience Design Principles

Darragh (2012) in a study was able to develop an experience design principle to serve as a framework to enhance the working experience of users in an office complex which he summarised into three (3) and is related to various touch points that serve as user engagement points or activities.

1. Circulation
2. Group interaction
3. Concentration

However, to further ensure that users find value in what is been provided, Morville in Garrett (2014) reveals factors that influence the user experience on a system. Figure 2.5 is Morvilles's user experience honeycomb representing the factors that influence a user experience making the system to be valuable.



Figure 2.5: Morville's user experience honeycomb
Source: Garrett (2014)

In addition to the above paragraphs, Theoretical Management Association (TMA) (2005) developed an audience experience framework which aim is to provide a set of dimensions along which a wide variety of different theatre experiences can be described as such, the framework allows for the evaluation on the experiences of different people based on stipulated touch points. Figure 2.6 is a framework for audience experience in a theatre.

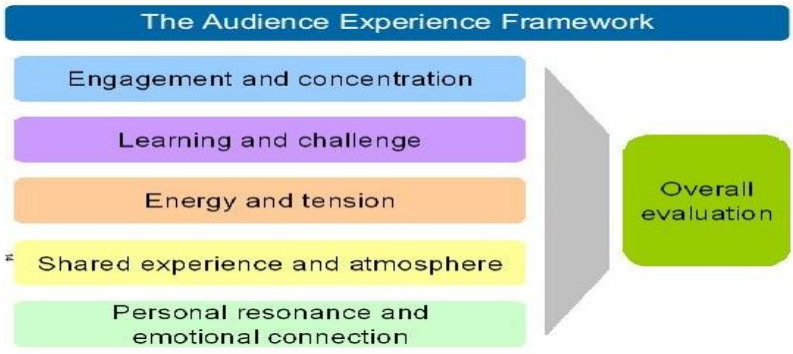


Figure 2.6: Audience experience framework
Source: TMA (2005)

2.1.4 Challenges of User Experience Design in Buildings

Gube (2010) in a study draws our attention to challenges that come with user experience design and lists them as follows:

1. User experience is not one size fits all.

   The best that can be done here according to Gube is to design for specific experience and promote certain behaviors because what works for one might have the opposite effect on another.

2. Can't be directly assessed with traditional metrics.

   The effectiveness of a user experience design can't be determined solely on statistics but assumptions could be made and users can be asked for anecdotal evidence.

3. Not the same thing as usability.

   Gube points that user experience and usability have become synonymous, but the fields are clearly distinct. User experience addresses how a user feels when using

a system while usability is about the user friendliness and efficiency of the interface.

Brown and Ratzkin (2011) in a study discusses the difficulty to satisfy everyone in performing arts centres with one experience due to a growing number of user demand, different social experiences idealized by the younger generation of cultural consumers which have diverged substantially from the more conventional experiences idealized by older users. Also Brown and Ratzkin further reveal this shift to be attributed to a new generation of artist who prefer a more interaction and symbolic relationship with their audience.

None the less, TMA (2005) reveals in a study an alternative way for designing for user experience and thus stipulates that whilst one person's experience of a given theatrical performance may be quite different from another, it may also be possible to identify underlying dimensions of experience that are common to both, thus a person may find one performance deeply moving whilst another leaves him/her completely cold but however, the result of both experience can be described on the same underlying dimension of experience that runs. Figure 2.7 is an illustration for scaling the underlying dimensions of the experience of two or more users of a performing arts centre.



Figure 2.7: Underlying experience of users
Source: TMA (2005)

2.1.5 Creating User Experience

Brown and Ratzkin (2011) reveals that the "total experience" begins from the moment the user member makes a decision to attend an event or gets invited as is often the case.

However, Tyrer (2010) in a study also reveals that the next step to take after relevant measures have been observed to understand the user, is how to evoke and express these needs as such, Tyrer reveals the challenges that come with addressing the users of the building as users often have different perceptions of a place but however notes that there are experiences shared cross-culturally that come from common bonds like the scales of our bodies, and other experiences that are culture-specific, shared by members of some group.

A study by Davis and Prieser (2012.p28) reveals in the work of Hughes a spectacle over "quality experience" and went further to reveal Verso's distinction between affective and actual experience.

The affective experience, which also present in contemporary arts practice, short circuits the responsibility of the user by providing a mediated experience force- fed as meaning while the actual experience, comes from the legibility of certain design language that are present and repeated throughout the works of architects. Verso in (Davis and Preiser, 2012 p28)

Hence, Ching (2007) reveals that since we move in time through a sequence of space, we experience a space in relation to where we've been and where we anticipate going. Thus, Ching presents the following principal elements of circulation system as positive elements that affect our perception of the forms and spaces of the building:

1. Approach- the distant view
2. Entrance- from outside to inside
3. Configuration of path- the sequence of space
4. Path-space relationship- edges, nodes and terminations of the path
5. Form of the circulation space- corridors, halls, galleries, stairways and rooms.

2.1.6 User Experience Evaluation Technique

Jong and Schellens in Anderson (2013. p,82) reveals that one of the ways for evaluating user experience is the text evaluation questionnaire which may require participants to play the role of critic thereby judging documents quality with relatively open-ended questions and the performance test method.

However, Hirai *et al* (2007) reveals other techniques used for interacting with the users during the design process. Thus, the techniques outlined by Hirai *et al* include contextual inquiry, user interview, focus group, questionnaire, field study amongst others. These techniques are shown in the table below.

Table 2.3. User research methods for qualitative and quantitative research type
Source: Hirai *et al* (2007**)**

Methods / Application		Contextual inquiry	User interview	Focus group	Card sorting	Field study	question naire	Performance testing	Heuristic evaluation
Type	Qualitative	▪	▪	▪	▪	▪			
	Quantitative						▪	▪	▪
Req.	With user	▪	▪	▪	▪	▪	▪	▪	
	Without user								▪

TMA (2005) further reveals in a study, that in order to find out what people are thinking and feeling, to know about their subjective experiences, there is no real

alternative to ask them but however, researchers have developed a large number of methodologies for collecting subjective data about peoples thoughts and feelings which includes:

i. Audience survey
ii. Focus group
iii. Interviews

2.2 Built Form Principles

A study by Brown and Ratzkin (2011) revealed that the contemporary audience now cares more about the setting of a venue and not just the performance itself. Therefore it now makes it important to study the built form principles since the location of the centre also plays the role in the experiential journey for the user of the performing arts centre.

Chatburn *et al* (2011), refers to the built form principle as outlined requirements for the delivery of high quality, flexible, adaptable and appropriate architecture thus, the architecture should try to reflect the area's cultural richness and aspiration to become a true centre. Thus, the following considerations (Climatic responsive design, external spaces and public realm interface, circulation and design for cultural expression) should be made for a successful built form

None the less, Ching (2007) in a study refers to the built form principles as ordering principles that guide the placement of forms in order to avoid a chaotic building environment. The built form principles listed by Ching are inclusive of axis, symmetry, hierarchy, datum, rhythm and transformation:

1. Axis:

The axis according to Ching is the most elementary means of organising forms and spaces in architecture and describes it as a line established by two points in space, about which forms and spaces can be arranged in a regular or irregular manner. Figure 2.8 shows an illustration an axis established by a symmetrical arrangement of forms and spaces.

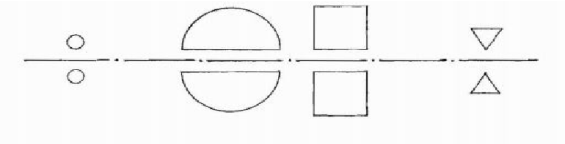


Figure 2.8: Axis line
Source: Ching (2007)

2. Symmetry

Ching describes symmetry as a condition that requires the balanced arrangement equivalent patterns of form and space on opposite sides of a drawing line or about an axis. Figure 2.9 shows the illustration of symmetry in the plan of an ideal church by AntoniFilarete.

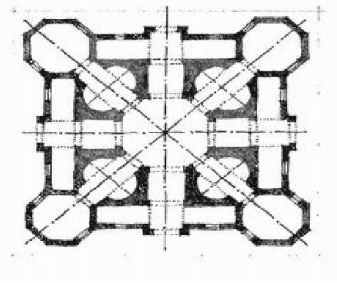


Figure 2.9: Chuch plan by AntoniFilarete
Source: Ching (2007)

3. Hierarchy

The principle of hierarchy according to Ching implies that in most, if not all architectural compositions, real differences exist among their forms and spaces

which reflect the degree of importance of these forms and spaces, as well as the functional and symbolic roles they play in organisation. Figure 2.10 shows the view of Florence illustrating the dominance of the cathedral over the urban landscape.

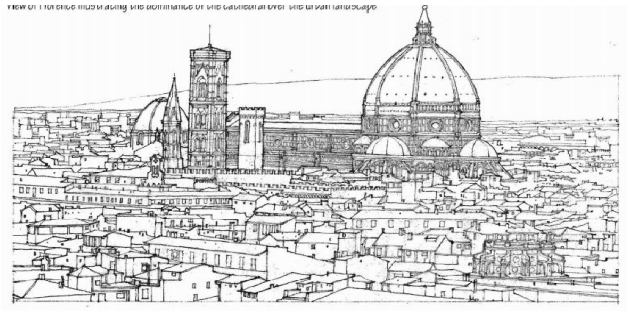


Figure 2.10: Cathedral at Florence
Source: Ching (2007)

4. Datum

The datum refers to a line, plane or volume of reference to which other element in a composition can relate, thereby organising a random pattern of elements through its regularity, continuity and constant presence. Figure 2.11 shows an illustration of a datum connecting five circles.

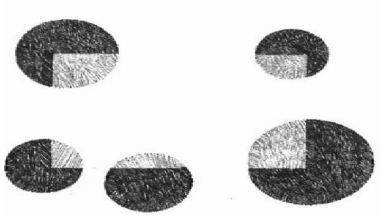


Figure 2.11: Datum line connecting circle spaces
Source: Ching (2007)

5. Rhythm:

Rhythm refers to any movement characterised by a patterned recurrence of elements or motifs at regular or irregular intervals. However, the movement may

be of our eyes as we follow reoccurring elements in a composition or of our bodies as we advance through a sequence. Figure 2.12 shows rhythm in the plan of Guachiminton complex.

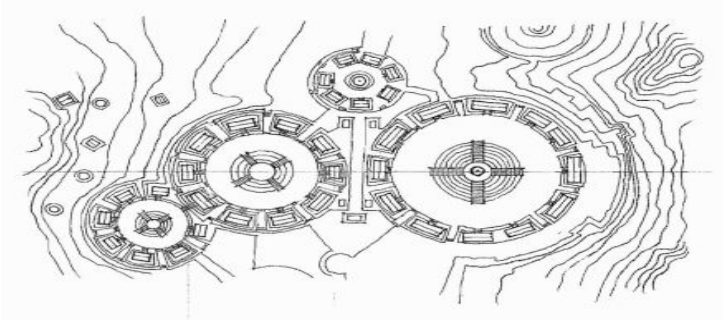


Figure 2.12: Guachiminton complex
Source: Ching (2007)

6. Transformation

The principle of transformation according to Ching allows a designer to select a prototypical, architectural model whose formal structure and ordering of elements might be appropriate and reasonable, and to transform it through a series of discrete manipulation in order to respond to the specific conditions and context of the design at hand. Figure 2.13 shows an illustration on the development stages of North Indian Cella.

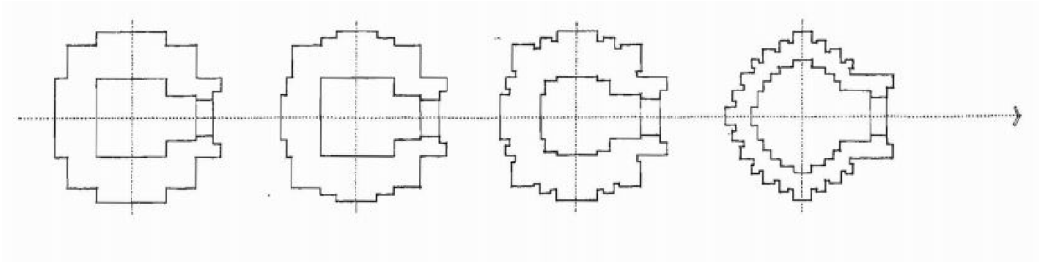


Figure 2.13: North Indian Cella
Source: Ching (2007)

However, to further develop guidelines surrounding the building form principles, Guiliani (2001) went further to list five (5) issues the building form principle should also address. They include:

1. Using circulation systems
2. Entering and exiting
3. Way finding
4. Obtaining products and services
5. Using public amenities

Conclusively, a study by Nardo (2011) further reveals that the built form consists of

1. Building forms that stand as objects in the landscape (occupying volume in space) or
2. Building forms that serve as containers (masses defining volume of spaces).

Hence, Nardo reveals that the properties of each plane on a building form (size, shape, colour, texture as well as spatial relationship to one another), determines the visual attributes of the form they define and the quality of space they enclose.

Therefore, for the purpose of this research, further study into the building form is carried out in order to understand variations attributed to the building forms that make up the built form.

2.2.1 Building Form

Totten (2009) reveals that the design of buildings is focused highly on the articulation of form, whether they are the artistic forms that have thrived since the advent of post-modernist movement, or the highly utilitarian forms of buildings designed to

maximize the envelope allowed by local codes and the financial returns of people renting out the spaces within.

None the less, Crisman (2007) defines the building form as the shape or configuration of a building. More so, Ching (2007) defines building form as a reference to both internal structure and external outline and the principle that gives unity to the whole.

In addition, Crisman (2007) further reveals that both form and space are given shape and scale in the design process and so, the placement of a building form in relation to its immediate site and neighbouring buildings is another crucial aspect of this form/space relationship. As such, factors that affect the building form according to Crisman include the following:

i. Shape and mass
ii. Scale and proportion
iii. Rhythm
iv. Articulation
v. Texture, colour and light

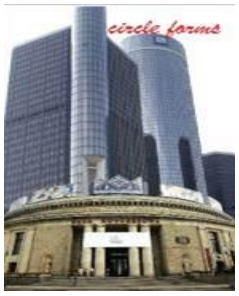
Crawford (2009) refers to the building form as an integrated design which combines with another to create a whole thus, Crawford went ahead to speculate that when visual integration of elements (colour, size, shape and placement) does not occur, the image of the building may suffer leaving a building that is not experientially enjoyed and gains little value in the eye of the society.

2.2.2 Building Form Types

Architecturally, the essence of every building form is a basic shape which is associated with one of the following elements: Square or cubic, circle or sphere,

rectangle, wave or curvilinear and the pyramid or triangle, (Feng, 2007). Plate I shows images of different building from types that make up the built environment.

[a] 

[b] 

[c] 

[d] 

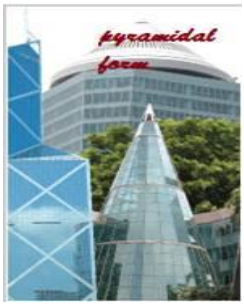
[e] 

Plate I: a. Square form b. Circle form c. curvilinear form d. Rectangular form and e. Pyramidal form
Source: Feng (2007)

Billington in Edmond (2007.p1) reveals three (3) building forms and they include:

I. Sculptural forms

II. Architectural forms

III. Structural forms

However, sculptural forms are created by an artist who is interested in exploring aesthetics and formal possibilities in three dimension, architectural form is dictated by architectural purposes such as practicalities of spatial organization and control of the flow of occupants and structural form is dictated by structural needs primarily to support gravity and lateral loads, and also need to provide a building envelope for shelter against the elements. (Billington in Edmond, 2007, p1). Plate II shows images of the three forms described by Billington.

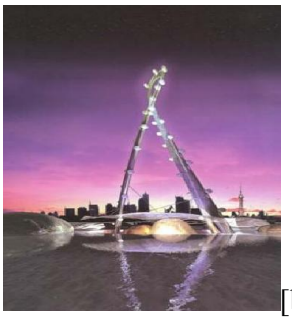
[a]  [b]  [c] 

Plate II: a. Sculptural form, b. Architectural form and c. Structural form Source:Edmond (2007)

Edmond (2007) further reveals that architectural forms can lean towards sculptural form as in the case where architectural elements are exaggerated for the sake of emotional impact. Thus, the linkage between these three (3) forms can be summarised as increasing constraints imposed on the designer, as one moves from the sculptural form, through architectural form to the structural form.

None the less, Crisman (2007) in a study reveals that primary shapes are used to generate volumes known as "platonic solid form", thus a circle generates the sphere and cylinder, the triangle produces the cone and pyramid, and the square forms the cube. More so, Crisman still found that the combinations of these platonic solids establish the basis for most architectural shapes and forms.

Further research by Ching (2007) categorises the building form to:

1. Regular and
2. Irregular form.

Regular form refer to those forms whose parts are related to one another in a consistent and orderly manner and are generally stable in nature and symmetrical about one or more axis (includes sphere, cylinder, cones, cube and pyramids) while irregular forms are those whose parts are dissimilar in nature and related to one

another in an inconsistent manner and are generally asymmetrical and more dynamic than regular forms.

In addition, Ching (2007) concludes that there can be regular forms from which irregular elements have been subtracted or result from an irregular composition of regular forms. Thus, regular forms can be contained within irregular forms and in a similar manner, irregular forms can be enclosed by regular forms. These statements by Ching are better illustrated in figure 2.16-2.18 below.

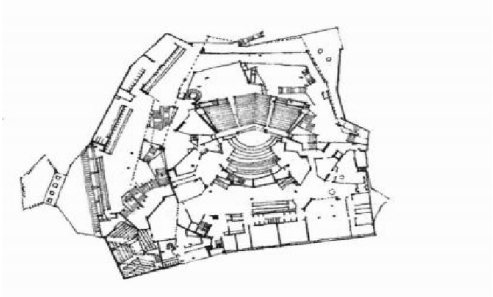


Figure 2.14: Irregular form, Philharmonic hall
Source: Ching (2007)

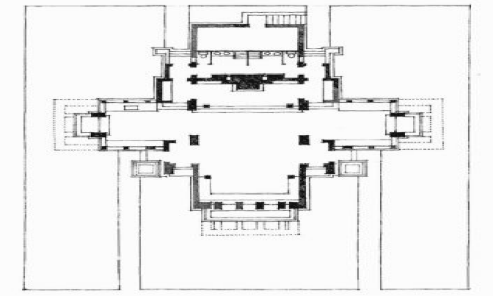


Figure 2.15: Regular composition of regular form in the Coonley play house.
Source: Ching (2007)

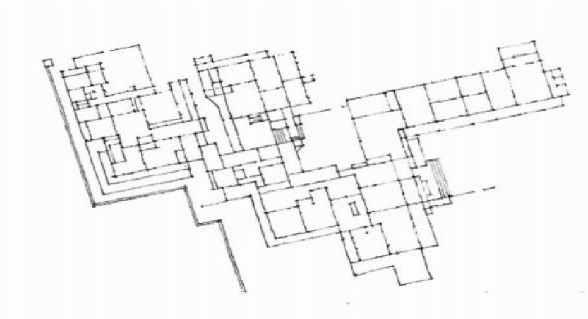


Figure 2.16: Irregular composition of regular form, Katsura imperial villa
Source: Ching (2007)

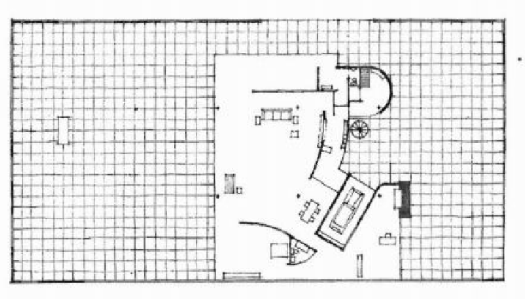


Figure 2.17: Irregular form with a regular field
Source: Ching (2007)

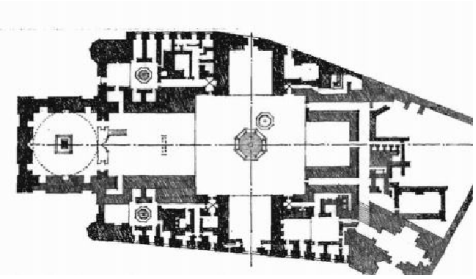


Figure 2.18: Regular form with an irregular composition
Source: Ching (2007)

However, for the purpose of this study, the research will focus on sculptural architectural forms since the purpose of this type of form is to impact a kind of emotional response on the users.

2.2.3 Sculptural Architectural Form

Following the notes of Ching (2007) and Edmond (2007), sculptural architectural form may be referred to as the integration of regular and irregular forms to provide

architectural elements and spatial organisation for the purpose of creating an emotional impact on users.

However, Baker (2008) in a study reveals that the advent of new materials and building methods has led to the creation of a new generation of building forms of unique shapes and materials, thus this new shapes have redefined what a building should, or could, look like and have produced buildings that more strongly resemble sculpture than traditional building forms.

Olsberg (2014) further reveals that sculptural architecture can be moving, monstrous, or just plain. Hence, Baker (2008) speculates that buildings like the Sydney Opera house have captured the affection of the cities in which they are located and have become cherished icons.

Thus, in view of the above statement, a documentation of the Sydney Opera House by Kerr (2003) reveals JornUtzon intension on the use of a sculptural architectural form to enhance user experience in the Sydney Opera house and so, Kerr speculates that Utzon draws inspiration from nature for organic form and creates architecture that is predominantly experiential in character

Figure 2.21 is one example of the buildings that has been categorised under sculptural architectural form.

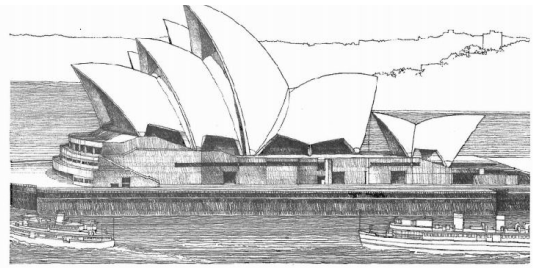


Figure 2.19: Sydney Opera House
Source: Ching (2007)

2.2.4 Impact of the Built Form on User Experience

A study by Duca (2012) reveals that space characteristics play a very relevant role for learning performances in school. More so, another study by Brown *et al* (2010) demonstrates that, while there are potentially significant gains to be made from integrating green building with workplace design strategies from the outset, there are many other factors beyond the quality of the space, which may play a role in shaping user experience.

Ching (2007) reveals an overview of the basic elements, systems and orders that constitute the work of architecture of which this constituents can be perceived and experienced either readily apparent, or while others are more obscure to our intellect and senses. Table 2.5 is Ching overview of the impact of the building form on users experience with relevant strategies to observe at various stages.

Table 2.4: Ching's Architectural system
Source: Ching (2007)

System	Activity	Remark
Architecture of	• Space • Structure • enclosure	- organizational pattern, clarity, hierarchy - formal image and spatial definition - qualities of shape, color, texture, proportion - qualities of surfaces, edges, and openings
Experienced through	Movement in space-time	- approach and entry - path configuration and access - sequence of spaces - light, view, touch, hearing, and smell
Achieved by means of	Technology	- structure and enclosure - environmental protection and comfort - health, safety, and welfare - durability and sustainability
Accommodating a	program	- user requirements, needs, aspirations - socio-cultural factors - economic factors - legal constraints - historical tradition and precedents
Compactable with its	context	- site and environment - climate: sun, wind, temperature, precipitation - geography: soils, topography, vegetation, water - sensory and cultural characteristics of the place

In addition, a study by McNicholas (2006) reveals the effect of ornaments on as constituents of the building form to perform functions as direction, the designation of profound transition and expression of movement, which in-turn enriches and enhances the experience of a space.

Finally, a study by Pillbrow (2006) reveals that the nature of the theatre space, the configuration of the audience and the intimacy engendered by the form of the auditorium can powerfully assist in the formation of users reaction thus, rendering the theatre to be a dead space or a lively one. As such, theatres designed to look like cinemas or lecture halls may provide dead spaces for theatre experiences.

2.3 The Architecture of Performing Arts Centres

Gillette (2000) defines a theatre as a building or space in which a performance may be given before an audience and noted that the term theatre is derived from the Greek word theatron, "a place of seeing." More so, a theatre has a stage area where the performance takes place.

However, Appleton (2008) reveals that performing arts also cover music-theatre, musicals, comedies, vandeville, puppet shows, reviews, mime, and street performance, amongst others. Thus, Appleton grouped performance venues into concert halls, operas theatres, arenas amongst others.

Pilbrow (2006) in a study further reveals that the theatre is no longer a place for listening or viewing, but however have become places for feeling, emotion and participation thus, the architects plays a critical role in a way that our ancestors took for granted.

2.3.2 Trends in the Performing Arts

Temizer (2003) in a study reveals how the avant-garde performances altered all the pre-established, conventional rules of the visual and spatial organization in theatre.

A study by the UNESCO (2012) reveals a range of performing art from vocal and instrumental music, traditional music, dance, puppetry and theatre which includes numeral cultural expression. More so, Appleton (2008) reveals that performing arts cover forms of music (orchestral, choral, pop/ rock and jazz), opera musicals, dance and drama, music- theatre, musicals, comedies, puppet shows, street performances, amongst others.

However, with the increase or variations in performing arts, Oskala *et al* (2009) reveals some factors that prevents or rather determine peoples engagement with the art and they include:

1. Their level of education
2. Social status
3. Ethnicity

Oskala *et al* (2009) went on to study the peoples past experiences on theater art and suggested the exposure of children into the performing art culture so as to encourage patronage of the facility along their generational lines.

In addition, Bunting *et al* (2008) listed some factors added to the ones above that influence attendance rates in theatre which includes (gender, ethnicity, age, region, nursing parents and health)

Eni (2013) also has outline the undergoing transition the Nigerian theatre stage is ongoing as theatre artists are striving for new methods of presentation which is

evident in the process of mechanization and adaptation of staging styles and techniques to fit into existing stages. Thus, Eni further reveals that the proscenium stage has lost its appeal to the African designer and has turn towards a radical inclusion of audience into the performance itself for an enhanced theatrical experience.

2.4 Building Form and the Creation of Experience in performing Arts Centres

Appleton (2008) reveals that though performing arts are concerned with a space for a live performances experienced by a user within a set period of time, the space is defined by specific technical and spatial demands, therefore requires a productive atmosphere for both audience and performer.

Temizer (2003) also reveals that though a stage space can be a medium for experimenting and exploring the concepts of vision and visuality, a performance space itself, is a materialization of visual relations between performances and audience. Thus, Appleton (2008) went further to list basis for which users of the facility will experience it and however correlates with the social and shared experiences created in the performing arts centre:

1. Sequence of activities to and from seating: Quality of entrance, foyer, cloakroom, toilets and auditorium
2. Quality of the performance: Ability to see and hear; content of play, show or concert
3. Associated activities: such as eating, drinking, and visits to art gallery, exhibitions and shops
4. Staff response to: To public, box office, access to seats, directions.

2.4.1 New Space Conception and Users of Performing Arts Centre

In view of the new trends that come with performing arts, Appleton (2008) reveals that experiences in performing arts influences new forms of auditorium; electronic music compositions have challenged the requirements of the concert hall whose traditional forms were based on non-amplified acoustic instruments more so, drama requirements no longer require fixed seating and stage positions, while street theatre requires only technical back up contrast with the increasing sophistication of stage.

However, Bunting *et al* (2008) reveals the role of users in the conception of performance space since every building is functional of the users, thus Bunting *et al* categorises the users of theatre into the following:

1. Audience
2. Performers
3. Management
4. Technicians and
5. Production staff

None the less, Knowles in Waters (2009 p.1) reveals that the geographical location of the performing arts centre in the city or elsewhere is significant for the understanding of theatrical production and reception alike. Thus Waters (2009) further reveals that users are already in a reception frame of mind as they approach the event as such, the process of their journey to the theatre may therefore have a distinct impact on their experience of the performance.

Hence, considering who the users of the performing arts centre, Bunting *et al*(2008) identifies some factors that will aid in the new performing arts centre space conception:

1) Site consideration:

Appleton (2008) reveals the following to be effective for selecting a performing art facility.

I. Location

II. Parking

III. Site surveys

IV. Building survey

Figure 2.20 is an illustration showing the functional linkages for buildings for the performing arts at city scale.

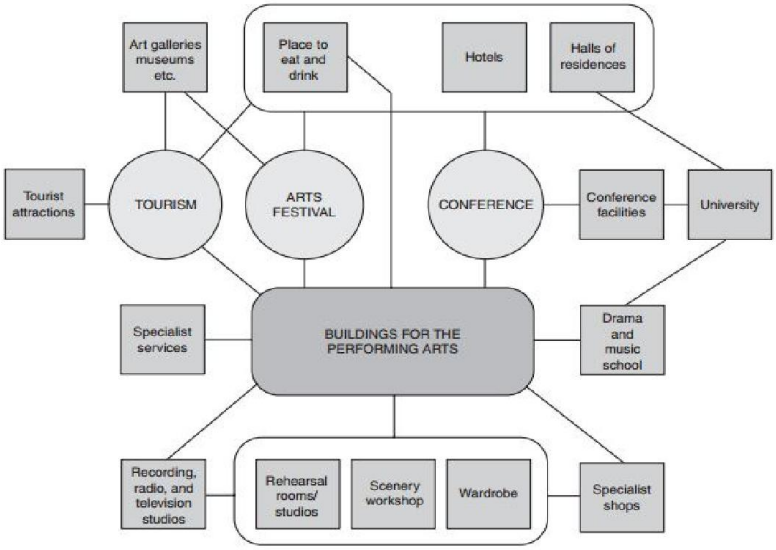


Figure 2.20: Functional linkage for performing arts.
Source: Appleton (2008)

2) Auditorium and platform/stage:

Appleton (2008) reveals that the auditorium is the container for the audience, focused on the platform/ stage upon which the performances occur. However auditorium and platforms/ stage design requires the following considerations.

I. Auditorium design:

II. Aural and visual limitation

III. Auditorium acoustics

IV. Seating layouts

V. Means of escape

VI. Wheelchair location, amongst others

VII. Platform/ stage design:

VIII. Platform: orchestral and choral

IX. Proscenium format: stage with or without fly tower.

3) Supporting facilities:

According to Appleton (2008), the characteristic of a building for performing arts is the distinct sequence of operations for each of the main functions. Thus the supporting facilities around the theatre are broken down into two four (4) groups namely:

I. Public space

II. Performers space

III. Production space and

IV. Rehearsal spaces

Figure 2.21 shows an illustration of the relationship between these supporting facilities in the performance theatre.

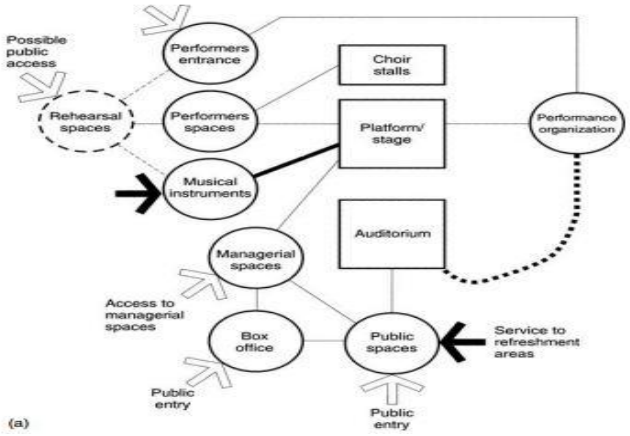


Figure 2.21: Relationship between facilities
Source: Appleton (2008)

However, Sheppard (2011) in a study further reveals that foyer spaces serve as the heart of a performance hall as it provides the connections between spaces, thus; the avenue for artistes and audience to meet up before a performance and also a warm up area in the intermissions. More so, a study by Doxa (2011) also reveals that foyer spaces provide for co-presence in the interior of public buildings. Figure 2.22 is an illustration showing the interactions that occur at the foyer space.

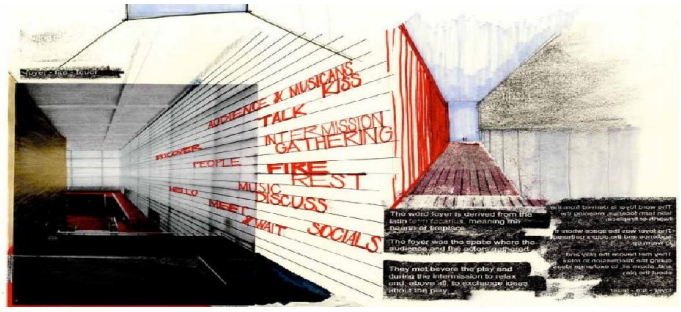


Figure 2.22: An illustration of interactions that occur on foyer spaces
Source: Sheppard (2011)

4) Spaces for children:

Appleton (2008) reveals insights into the UN convention on rights of a child or young person to development of the personal and mental abilities. Thus

having children and young person's incorporated in creative activities and the arts as a matter of rights.

In addition, Oskala *et al* (2009) further reveals that spaces for children should be encouraged in other to build the audience for tomorrow.

2.4.2 Creating Experience in Performing Arts Centres

Tobin press kit (2014) reveals various experiences for users at Tobin centre for the performing arts which start with:

1. Arrival experience on a site scale which start from the public open space.
2. Social experience on pedestrian and lobbies (circulation) of the centre as lobbies offer diverse experiential journey through the existing facilities.
3. Finally, the hall is designed to produce an enveloping acoustical and visual experience for audience through the use various acoustic consideration and flexible stage to accommodate for different performance types. Thus providing an overall theatrical experience to visitors of the arts centre.

However, Kerr (2003) reveals Jorn Utzon principles for creating experiences in performing arts centres and thus, reveals that it becomes important to note the following

1. Users do not enter and walk through the building along dark corridors to a dark hall.
2. The centre should try to exhibit architectural and sculptural features along lobbies and corridors with access to scenic views on the exterior, so users can retain or have sequential experience to other places of experience.

3. Users should be aware of their orientation at all times and at the same time; users should have an easily understood tour, from entrance to their seats and out again.

In addition to the above statements, Wallace (2013) reveals that one of the ways to enhance or start the experience for users at the arrival stage was to start with a name for the centre so that users can understand the attraction or know what to expect.

None the less, Waters (2009) stated in a study that social experience enhances, and even accentuates the individual's response to the performance by involving the audience in a kind of informal performance before the start of the actual event itself. More so, Lorentz (2006) relates social experience to threshold experience and describes it as a transitional experience represented by the physical manifestation of a space which bridges outside with the inside, often described as a portal that provides an opportunity for the individual to cleans their mind of the space they leave behind in order to be receptive of the experience they are about to enter.

In addition to the statements above, for an enhanced theatrical experience, one of the steps taken is on the stage-audience relationship. Thus, Schnarr (2011) reveals contemporary set designers and choreographers frequently prefer to have performance spaces that allow the stage to become integrated with audience space, in order to create a more dynamic and intimate experience to the stage house. See figure 2.23 for different types of stages showing the performers-audience relationship.

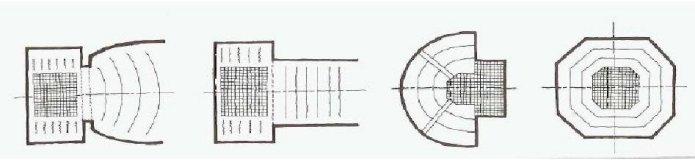


Figure 2.23: Different types of stages
Source: Schnarr (2011)

Lorentz (2006) in study further reveals in the abbey church in Weltenburge, the incorporation of emotional/spiritual context on the building form which conveyed authority and power to the users of the religious theatre. However Lorentz (2006) went further to showcase the sequential rhythm which the architects of the Baroque era used to heighten user experience of cathedrals, palaces and theatres and they include:

1. Arrival: This is generally at a piazza or forecourt, to admire the size and vertical scale of the building often followed by a flight of stairs.
2. Compression: Entry through the portico and transitional space between outside and inside.
3. Decompression: The other side revealing dramatically the internal scale, spatial gradeau, and often dramatic lighting in which impresses the user.
4. Conceptual orientation: The move into the building, where the experience begins.

Other forms of experience to note include experiences cited in the South Australian Tourism Commission (SATC) (2007) which include soft and hard landscape experience, nature experience, walking experience, cycling experience, retail experience, contemporary experience which supports culturally supports cultural heritage, work experience, guided tour, amongst others. Thus, TMA (2005) summarises this various experiences as shared experiences

2.4.3 Theatre Space and Character

For the purpose of this study, the Tempe centre for the arts and the Tobin centre for arts in San Antonio will be examined to understand the theatre space and its character.

This studies will however be used as examples to evaluate various spaces, experience points and their character found in a performance arts centre.

2.4.3.1 Example 1 (Tempe Centre for the Arts)



Plate III: Exterior Amphitheatre
Source: Architekton (2014)

The Tempe Center for the Arts houses the state of the art, 600 seat proscenium theatre, a 200 seat studio theatre and a 3,500m^2 front gallery.

Room characteristics: The main characteristics of the room are,

Volume-18,900m^3, Seat no.-600, Volume/seat-6.9m^3/seat, Maximum width-29m, average width-21m, mean ceiling height-15.9m, Distance to the stage for the most distant V.I.P seats- 25m, Distance to the stage for the stalls seat-29m (low), 33m (upper).

Facilities: The 88,000m^2 facility features a theatre, studio, gallery, banquet/meeting room. Donor lounge, an on-site, full-service box office, theatrical and administrative support areas, two dedicated catering area, arts retail space, a lounge and 17-acre art park.

Auditorium: the auditorium incorporates for four seating levels-an orchestra level, parterre and two balconies. To the side of the auditorium, boxes extend and nearly connect to the stage. Above the forestage, an overhead grid allows suspension of scenery, lighting and sound equipment.

Experience points

1. Arrival experience: The experience created takes advantage of the lake front, have large gatherings area framed to give the tremendous views from this site and all accented with visual art. Plate IV shows an arrival experience that takes advantage of the lake view front.



Plate IV: View from Lake Front
Source: Architekton (2014)

2. Social experience: Places for social experience are seen in the provision of lobbies, stairs (means of circulation). Plates V shows images revealing interaction spaces in the form of lobbies were the users are engaged in a social experience.



Plate V: Lobbies for social/ shared experience
Source: Architekton (2014)

3. Theatrical experience: this experience is achieved with the well-equipped theatre hall both for acoustical and visual experiences. Plate VI shows a well-

equipped interior space of the auditorium which increases the users' engagement with the art.



Plate VI: Main auditorium
Source: Architekton (2014)

2.4.3.2 Example 2 (Tobin Centre for the Performing Arts)



Plate VII: Tobin centre for the performing arts
Source: Tobin press kit (2014)

The Tobin centre for the performing arts in San Antonio, Texas embraces the multi-faceted cultural identity of the city with complex tapestry of form, materiality, light and landscape which offers a diverse architectural experience capable of continuous transformation in response to programmatic and environmental influence.

Room characteristics: The main characteristics of the room are,

The centre is a 183,000-square foot facility that house the state of the art, 1,768 seat performance hall and 231-seat flat floor studio theatre. The tall slender form of the main performance hall optimises sightlines and provides the ideal geometry for rich

reverberant symphonic sound, while the stage house accommodates a sophisticated variety of modern stage system.

Experience points

1. Arrival experience: the arrival experience starts from the public open space along the west side of the building which connects directly to the river walk with outdoor event venues. Plate VIII shows an arrival experience to the centre from the water front.



Plate VIII: Entrance point from water front
Source: Tobin press kit (2014)

2. Social experience: the social experience is seen on the lobbies of the centre as lobbies offer diverse experiential journey through the building. Plate IX shows social experience on a lobby space.

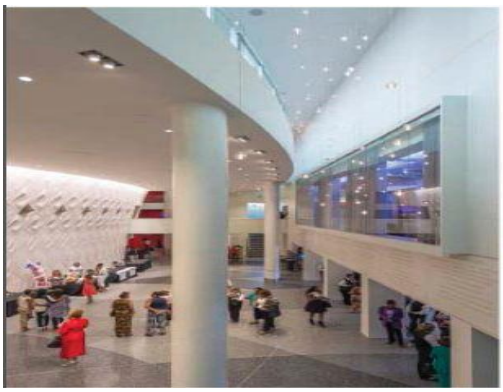


Plate IX: Circulation lobby
Source: Tobin press kit (2014)

3. Theatrical experience: this experience is achieved with the well-equipped theatre hall both for acoustical and visual experiences. Plate X shows a well-equipped interior space that enhances the theatrical experience in the auditorium.



Plate X: Main Auditorium
Source: Tobin press kit (2005)

2.5 SUMMARY OF LITERATURE REVIEW

The research so far tries to establish a relationship between the building form and user experience. None the less, the study from literature reveals the following:

1. User experience can be attributed to how a person feels when interfacing on in contact with a building/ facility. Thus the user experience centres on a range of visitor's needs (way finding, climate responsive design controls, interaction amongst others). User experience in performing arts centres is achieved by recognizing experience points where there are common experiences and this is gotten with the use of survey studies on audience. Experience points in performing arts centres include arrival experience, social experience and theatrical experience (acoustical and visual experience)
2. The building form may be referred to as forms that are dictated by architectural purposes as such, these forms are often affected by some factors (shape, mass, scale, proportions, climate, amongst other factors) which

impacts on the immediate site or environment it is going to be placed. In addition, the study on form further reveals various building form type and categorised them in to sculptural forms, architectural forms and structural forms. However, for the purpose of this study, sculptural architectural forms are chosen to create some emotional impact on the user by adapting principles like axis, symmetry, datum, hierarchy, rhythm and transformation amongst the other principles guiding the building form.

3. The review on performance art centres reveals the current trend in the theatre and sees how the recognised experience points seen in the performing arts centres impacts on the grouping of venues in concert halls, opera halls, amongst other performing art venues. Thus, design considerations are made (site consideration, auditorium and platform/ stage considerations, supporting facilities and spaces for children) to further incorporate and provide the necessary services to users for the purpose of enhancing their experience.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Background

Oloafe (2010) defines research design as the plan, mode or the conceptual structure of a research and the type of approach adopted in the study, which will serve as the blueprint for the measurement of variables, collection and analysis of data. Thus, an exploration on the qualitative type of research is used for this study following the notes of Hogue (2011) who reveals that for social phenomena's, an understanding of the social and cultural life of the people is needed to develop or recommend solutions to the problem. The following methods of data collection to be used for this study, their relevance and how they will be applied to obtain my results are discussed below.

For the primary sources, information will be gathered and result finally obtained through case studies under which, the information are gotten through visual surveys, photographs, interviews and questionnaires which will provide the researcher with first-hand information on the subject matter, secondary data will be obtained from the cases visited, from relevant literature, standards and stipulations that have been marked for such research.

3.2 Research Method

The study aims to carry an assessment of how the built form principles can impact on user experience in a performing arts centre. However, it will be important to note that the research itself on user experience is a social phenomenon and thus, following the notes of Hogue (2011), the phenomenon requires an understanding of the social and cultural life of the people the performing arts centre will serve.

In view of the issues raised in the above paragraph, an exploration of the qualitative approach to the research will be adopted for this study.

Qualitative research: according to Hancock (2012) is a research concerned with developing explanations of social phenomena. More so, Osuala (2005) in a study on research methodology reveals that qualitative research forms an investigation based on the recognition of the importance of subjective experiential "life world" of human being thus, the task of the research is now to capture what people say and do as a product of how they interpret the complexity of their world, to understand events from the viewpoints of the participant.

3.3 Case Study Selection Criteria

The bases for selection of cases are their potential to possess some intrinsic virtues which are in relation with the phenomenon under consideration (Oluigbo, 2010). Hence, the criteria for the selection include the following:

The project would be predominantly Performance Art buildings except otherwise, and then buildings with similar functions will be analysed.

The project need to have some considered aspects like shape, mass, scale, proportion, etc., which will aid in analysing the building form. In addition, these cases are studied in other to answer also research question 1, 2 and 3.

From the above listed selection criteria, the cases selected for this research are:

1. National Theatre Iganmu, Lagos.
2. Cyprian Ekwensi centre for Art and Culture, Abuja.
3. UK Bello Arts theatre, Minna, Niger state.

3.4 Instrument of Data Collection

Oloafe (2010) in a study reveals some instruments of data collection including the use of questionnaires, interviews, observations, audio and video recording, among others. As such, the instruments used for data collection in this research include; visual survey, interviews and questionnaire survey.

Visual survey:

This method of data collection is chosen to answer research 2 which is "To what extent can the built form affect user experience".

Thus, visual survey will involve careful observation of the project features, guided tour around the building and its facilities. Information will be gathered to assess the outlined variables for close examination with the use of checklists. Data will be documented and discussed through the use of tabulation, sketches, plates, Figures, and written reports.

Interview:

This method of data collection is chosen to answer the research question 3 which is "What are the contemporary developments in design of architecture for theatre art performances".

This is a method of data collection which involves preparing a list of interview schedule and laid down questions to ask the interviewee and it is grouped into three (3) main types namely: structured, semi-structured and unstructured interview (Neville, 2007).

In view of the above paragraph, the semi structured and unstructured interview is preferred. Hancock (2012) reveals that semi structured interviews tends to work well when the interviewer has already identified a number of aspects of the phenomena he wants to be sure of addressing. The interviewer therefore can decide in advance what area to cover leaving the schedule open and receptive to information from the interviewee.

Questionnaire survey:

This method of data collection is chosen to answer the research question 1 which is "How can user experience be measured" and the 4th research objective which is "to develop a framework that will be used by architects and other researcher".

This is a type of study that asks large numbers of people questions about their behaviour, attitudes and opinions (Marezyk *et al*, 2005). However, Campbell and Katona in Marezyk *et al* (2005 p.152) reveals some general steps to be considered for conducting a survey which includes, general objectives, sample, questionnaire, fieldwork, content analysis amongst others.

I. Sample:

Marezyk *et al* (2005) reveals that the major aim of this step is to determine the specific population that will be surveyed.

However, TMA (2005) reveals in a study that there is no straight forward answer as to how many people are to be sampled but however reveals a general rule of thumb agrees to practical minimum sample size of 15-20 people, (i.e say 15 women - 20 men) in each group. Thus, for this study, a population of 105 participants will be surveyed (35 person from each case study area).

II. Questionnaire:

Hirai *et al* (2007) describes questionnaires as a method that involves a set of questions designed to collect responses and opinion from users. However, Marezic *et al* (2005) reveals that the focus of this step is deciding how the sample is to be surveyed either by mail, by phone or in person.

None the less, one of the vital features of qualitative research is the emphasis on natural setting. However, Groat *et al*, (2006), argue that a questionnaire design in itself creates a setting which is not natural but in order to avert the effect of this property in the use of questionnaire, the users are administered the questionnaire at the entrance point of the various theatre immediately after a performance or event (i.e natural setting) following the notes of TMA (2005) that reveals the best time to administer the survey forms is as people leave the auditorium, so that they could complete them there and hand them straight back. This is however so because their experience (total experience) remains fresh in their memories.

None the less, the questionnaire format adopted closed ended questions in a large part of its design. This approach was adopted in agreement with TMA (2005), whom reveals that user experience in theatres can be measured when people are asked to completes a survey in which they judge their own feelings or experiences relative to a scale or number of statements.

III. Pilot test:

Larossi in Anderson (2013 p.92) reveals that the pilot test represents the only opportunity to verify that the survey questions and the data collected will ultimately

reflect any poorly defined questions or concepts. Thus, the pilot test was administered on three (3) persons to check the effectiveness of the questionnaire.

3.5 Validity and Reliability of Research Instruments

Oloafe (2010) in a research further reveals that for any study to be acceptable as scientific or empirical, the research instruments must exhibit an appreciable measure of validity and reliability.

Studies from the literature review reveals some evaluation techniques for user experience which could be used to study user related issues.

However, a study by Brown *et al* (2010) on evaluating user experience in green buildings in relation to work place culture made use of Building Use Studies (BUS) occupant questionnaire to obtain comments on building design, work requirements, comfort, health and productivity of persons.

In addition, Golafshani (2003) in a study reveals that a paradigm in qualitative research is constructivism which views knowledge as socially constructed and may change depending on circumstances. Thus, Golafshani went further to reveal that constructivism values multiple realities that people have in their minds. Therefore to acquire valid and reliable realities, multiple methods of searching or gathering data should be in order which calls for the use of triangulation in the constructive paradigm

Osuala (2005) defines triangulation as a common technique used to improve the internal validity of research instruments thus; triangulation may be defined as the use of two or more methods of data collection in the study of some aspect of human behaviour.

Therefore, the methods chosen to improve validity and reliability of this study include visual survey of case studies, interview, questionnaire, and data review.

3.6 Procedure of Data Collection

1. A field survey to these cases will be done and then, visual survey will be carried out using a checklist as guide for getting the needed information.;
2. Visual survey will be documented using, photographs, sketches, Figures, tabulating, and descriptive accounting.
3. Data from interviews will be obtained with the use of a tape recorder. Tape recording is preferable for a lot of reasons, one been that the interviewer can concentrate on listening and responding to the interviewee and is not distracted by writing down what is said. Also, the interviewees may feel inhibited if the interviewer starts to scribble down notes in their presence.
4. For questionnaire survey, the self-administered method of administering survey is adopted. This is however done so as to ensure the retrieval of most of the questionnaire.

3.7 Variable of Study

The analysis of the various components of each building will be based on the research variables which are used as checklist to evaluate the design for user experience. Thus these variables are broken down into two (2) groups namely:

1) User experience points in performing arts centres
    I. Features for arrival experiences
    II. Features for social and shared experiences
    III. Features for theatrical experience(room experience, work experience)
    IV. Acoustic experience features and visual experience considerations

2) Built form principles

   I. Building configuration

   - Spatial organisations along axis or circulation paths
   - Hierarchy of functional spaces
   - Datum/ building relationship to surrounding facilities and internal spaces
   - Rhythm
   - Symmetry
   - Transformation/flexibility of spaces

   II. Climatic responsive design strategies

   III. Circulation and services

   IV. Cultural expression on buildings

3.8 Data Analysis

Data analysis will be based on

1. Content analysis which includes both descriptive and latent level of analysis (interpretation)
2. Comparative analysis of relevant cases
3. SPSS statistics data editor will be used for descriptive statistics of questionnaire survey
4. Use of charts, photograph and tables
5. For the interviews, the procedure adopted for this research is the "constant comparative analysis". It is a process whereby data collection and data analysis occur on an on-going basis. The first interview is conducted, transcribed and analysed as soon as possible before the next interview.

Interesting findings from the analysed data are incorporated into the next interview schedules.

6. For the questionnaire survey, the procedure selected for the analysis of this method is the content analysis which involves often transforming the often open-ended survey responses into qualitative data. However, SPSS (Statistics Package for Social Scientist) is used to analyse questionnaire survey

Descriptive analysis is the analysis were data is analysed on what exactly was said with nothing read into it and nothing assumed of it, while the latent level of analysis is used to analyse data from interview and is concerned with what was meant, inferred or implied by response or result (Hancock, 2012).

3.9 Theoretical Framework

Study from literature can be summarised into a framework, thereby revealing the critical evaluations made and areas that have been taking up to be useful for this study. To this end, the theoretical framework is summarised in the schematic diagram in figure 3.1 below.

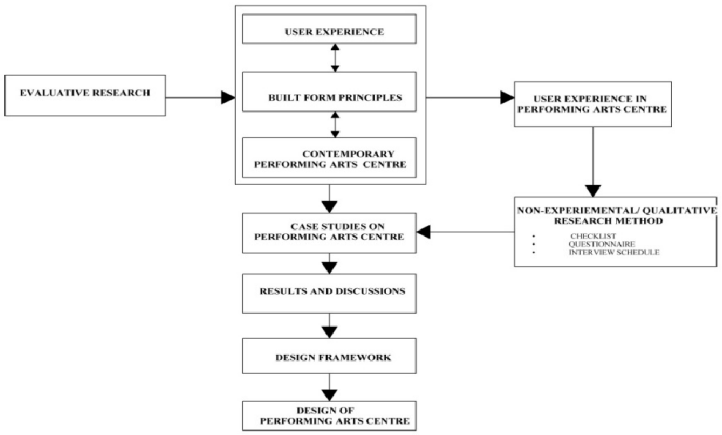


Figure 3.1: Theoretical framework
Source: Author, 2014

CHAPTER FOUR

4.0 FINDINGS AND DISCUSSION

4.1 Findings at National Theatre, Lagos



Plate XI: National Art Theatre
Source: Author's field work

Client:	Nigerian government
Location:	Iganmu, Lagos state
Contractor:	Technoexportsroy, Bulgaria
Construction date:	1973–1976
Construction material:	concrete, steel, and glass
Climate:	tropical

4.1.1 Background

The National Theatre is an architectural master piece located at Iganmu, Lagos State. The theatre covers an area of about 23,000 square metres and stands over 32 metres tall having seven (7) floors to distinguish different functions within the space. Figure 4.1 is a ground floor plan of the National theatre showing arrangement and relationship between floor spaces.

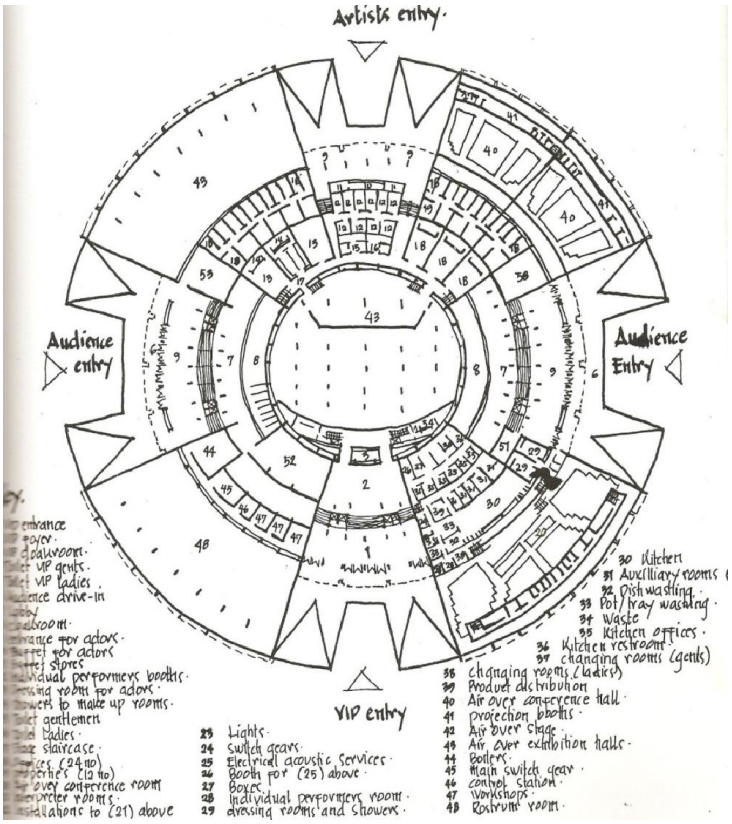


Figure 4.1: 1st floor plan
Source: Ogar *et al* (2014)

4.1.2 Description/ Room Characteristics

1. Entrance: The complex has four main entrances and each entrance is designated as follows.
    i. Entrance A- this is the V.I.P entrance that bears the coat of arm and it faces the Lagos State new railway station.
    ii. Entrance C- is the entrance that leads to the general lobby and administrative wing of the complex.
    iii. Entrance B and D- serves as the entry point for audience and leads to all six halls, massive lobbies, restaurants and bars.

Figure 4.2 shows a layout of the National Art theatre with the various access points into the site.

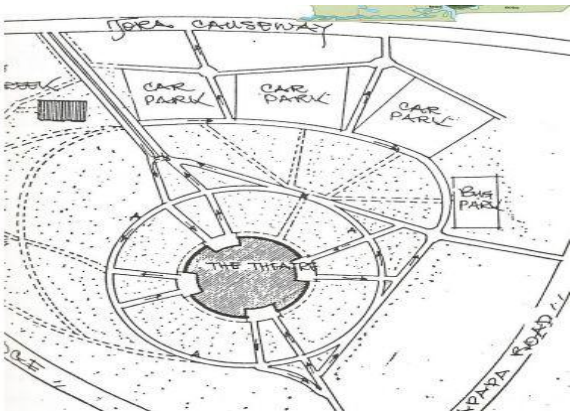


Figure 4.2: Site plan showing various drop-offs
Source: Ogar *et al* (2014)

2. The halls

    1. Main Hall: The main hall seats 5,000 people and consists of a collapsible stage and an auditorium, but when on proscenium, the hall has a capacity for 3,500 seats. More so, the hall is equipped with cinemas screens, projectors and also ideal for musical concerts, drama, film shows, wrestling, boxing and so on. Plate XII shows interior images of the main bowl showing the state of the hall at the moment

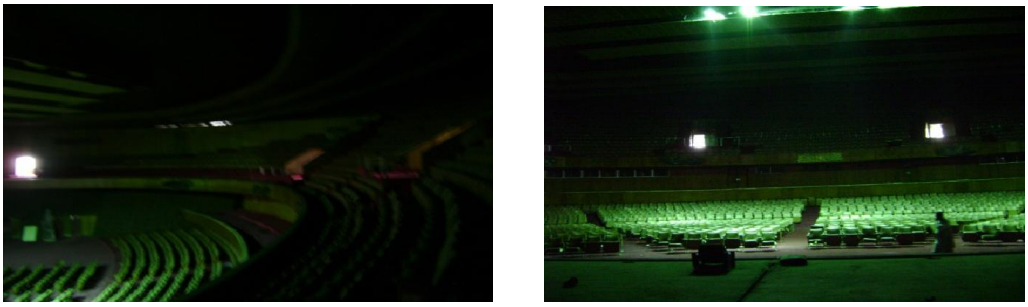


Plate XII: Seating arrangement in the main hall viewed from the side.
Source: Author's field work

    2. Cinema Halls 1 and 2: Each of these halls has a capacity for 750 seats over a raked floor and are both equipped with standard fixed screens for film shows. More so, each hall has a standard proscenium stage facility which includes artistes' dressing rooms and modern lighting

equipments. Plate XIII shows the interior of the cinema and the nature if sitting arrangement.



Plate XIII : Cinema hall
Source: Author's field work

3. Conference/Banquet halls: The conference hall has a capacity for 1500 seats and state-of-the-art audio equipment capable of interpreting eight languages simultaneously. More so, the hall is also equipped with standard proscenium stage facilities. Plate XIV shows the interior of the conference hall and the stage facilities.



Plate XIV: Conference/banquette hall
Source: Author's field work

4. Exhibition Halls 1 and 2: Each of these halls has a capacity for 1500 seats and also having lighting and sound facilities. More so, these halls have proscenium stages provided but without dressing room facilities.

Plate XV shows the interior of the exhibition hall and the type of stage in use.



Plate XV: Proscenium stage in the exhibition hall
Source: Author's field work

5. Press hall and Bar: This hall has the capacity to seat between 300-400 persons and is suitable for press conferences and mini receptions. Plate XVI shows the bar from the lobby space which services the press hall



Plate XVI: Image of the Bar
Source: Author's field work

6. V.I.P lounge: Located at entrance A, and consist of a reception area and main lounge. It is ideal for 500 seats. Plate XVII shows the image of one of the V.I.P lounge which is used also as a presidential lounge.



Plate XVII: V.I.P lounge
Source: Author's field work

7. Roof garden: This area is suitable for open air get together and provides an aerial view of a large part of Lagos. Plate XVIII shows the current state the roof top garden which provides a scenic view to the surrounding environment.



Plate XVIII: Roof garden
Source: Author's field work

3. Service floors: the service floor is located at the basement floor of the complex having a power substation and HVAC system. Plate XIX showing a distribution board at the substation located at the basement floor.



Plate XIX: Distribution board in the substation
Source: Author's field work

4. Other facilities: Include seminar rooms, offices, rest rooms, car park capable of holding 250 cars on the ground floor, welding and carpentry workshop, a post office, restaurants and bars.

4.1.3 Findings from Visual Survey

At the National Theatre, the factors that were examined to evaluate the user experience are;

1. User experience points
2. Built form principles

Thus, these factors are elaborated in the following paragraphs.

4.1.3.1 Accessing user experience points at National theatre

User experience points are used to check considerations for enhanced user experience in the National theatre.

Table 4.1. User experience points in National arts theatre

Note that 4-very strong, 3-strong, 2-weak and 1- absent.

User experience points	Level of reflectance	Remarks
Displayed features for enhancing experience on point of arrival various entrances	2	Access to the national theatre is by vehicles (private and public vehicles). However, walk paths were not shaded which exposes the users to extreme conditions like sun and rain fall. The building form is however symbolic and so impacts a "wow" experience on the users. See plate XI above for image on the theatre on arrival which the experience is impacted majorly with the building form.
Features for social experience and shared experience	2	Facilities for social and shared experiences were present at the national theatre. However, facilities to enhance these social experiences were not provided which has lead to the non usage of these spaces.
Features for theatrical experience (room experience)	3	Facilities to enhance theatrical experience are seen in the nature of seating arrangements, acoustic consideration with the evidence of wall materials and the flexible stage. See plate XII above for interior of main bowl showing high considerations for theatrical experience. The structure however didn't meet the visual requirement for the hall as the distance from the last row, exceeds the maximum of 32m that should have been. See figure 4.3 for section through the hall showing the distance from stage to last row seats.

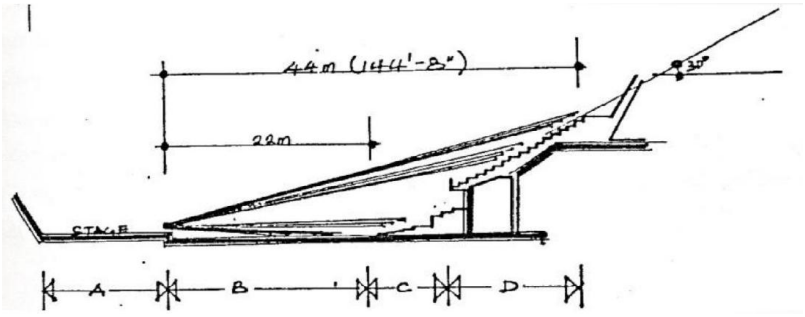


Figure 4.3: Section through the National art theatre main bowl.
Source: Ogar *et al* (2014)

4.1.3.2 Assessing the application of built form principles

The built form principles checked in the National theatre are documented in the table below:

Table 4.2. Responsive design to built form principles

Note that 4-very strong, 3-strong, 2-weak and 1- absent.

Built form principles			**Level of reflectance**	**Remarks**
Building configuration	a	Spatial organisations along axis lines	3	Spaces were arranged around circulation roads and lobbies which served as axis line, granting access into and out from the National theatre.
	b	Hierarchy of functional spaces	4	The National theatre stands out from the surrounding buildings due to its massive form, which reveals the level of symbolic importance the building has.
	c	Datum points	3	Datum/building relationship surrounding the national theatre is with the use of fence, major roads around the site and green areas.
	d	rhythm	3	The reoccurrence of elements is only seen in the column members that supports the main auditorium.
	e	symmetry	4	The national theatre shows balance with the symmetrical arrangement of its supporting halls around the main bowl. See plate XX below.
		Transformation/flexibility of spaces	3	The national theatre shows potentials for future developments to suit the user requirements for upcoming patronisers through the organisational arrangement of the supporting halls. See also plate XX.
Climate responsive design strategies			2	The structure made use of natural lighting and ventilation in offices and circulation lobbies. However, the building plan adopts deep planning and has led to the use of artificial lighting in most places of the interior. Plate XXI shows the dilapidation of a space in the national theatre due to limited accessibility and natural lighting, while plate XXII shows areas where natural lighting and ventilation is achieved.
Circulation and services			3	Vehicular and pedestrian circulations are provided upon reaching the site, leading to various entrance points. In the interior, wide circulation lobbies were provided to cater for horizontal circulation while staircases and lifts were provided for vertical circulations. Fire service facilities were also provided around the structure.
Cultural expression on building			2	Local art engravings are seen at various entrances, with the coat of arm at the V.I.P entrance. In addition provisions for out-door recreation were also provided for.

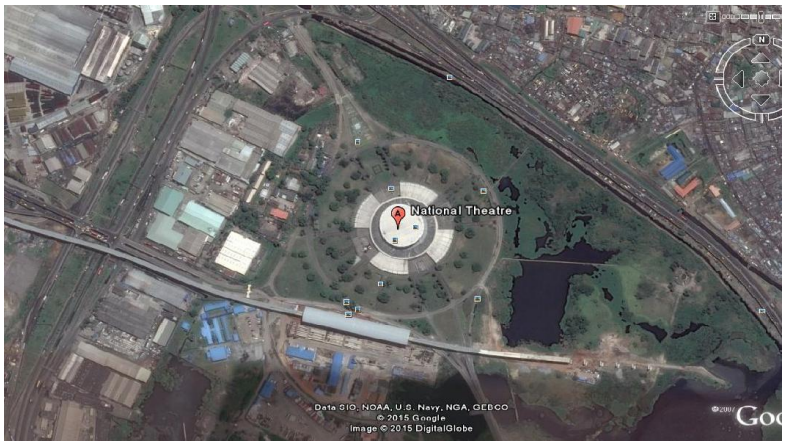


Plate XX: Layout of National theatre
Source: Google image (2015)



Plate XXI: Deterioration on a backstage lobby
Source: Author's field work

[a]  [b] 

Plate XXII: [a]Daylighting on circulation lobby and [b] Soft and hard landscape interface
Source: Author's field work

4.2 Findings at Cyprian Ekwensi Centre for Art and Culture



Plate XXIII: Cyprian Ekwensi centre for art and culture
Source: Author's field work

CLIENT:	Nigerian Government
LOCATION:	Area 10, Garki Abuja.
CONTRACTORS:	
CONSTRUCTION DATE:	May 15th 1992
CONSTRUCTION MATERIAL:	Concrete and glass
CLIMATE:	Tropical

4.2.1 Background

The art and culture is located in Area 10, Garki District of Abuja and is named after late Cyprian Ekwensi. The complex is made up of 3 (three) floors to distinguishing various spaces like the administrative wing, lecture rooms, community hall, museum and so on. However, the study on the art and culture is concentrated at the community hall and its supporting facilities. Figure 4.4 shows the floor plan of the centre.

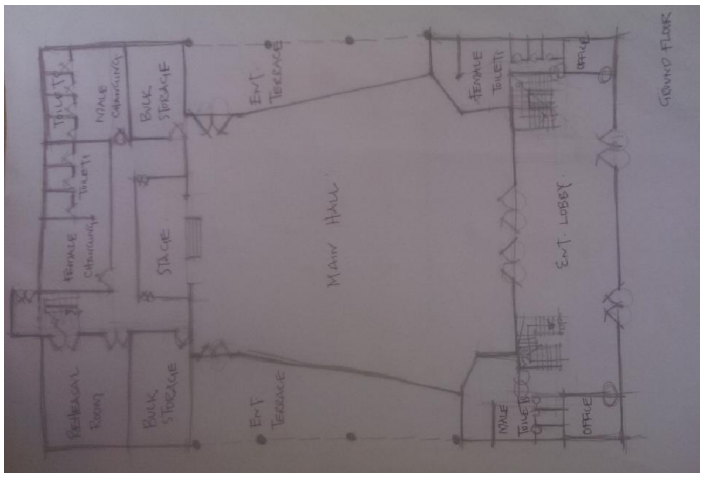


Figure 4.4: Ground floor
Source: Author's field work

4.2.2 Description/ Room Characteristics

1. Entrance: The complex has a main entrance to the front and two (2) side entrances which all lead to a courtyard links to other spaces within the complex. Plate XXIV shows one of the side entrance points to the auditorium.



Plate XXIV: Entrance to the hall
Source: Author's field work

2. Hall: The community hall seats 500 people and has a proscenium stage with supporting facilities. The hall has three main entrances in the ground floor with one back entrance leading to the dressing rooms and offices. On the first floor, there are two doors leading to the gallery. Plate XXV shows the hall interior with the nature and type of stage.



Plate XXV: Auditorium
Source: Author's field work

3. Seminar and games rooms: the community hall is equipped with 2 seminar rooms and 2 games room on both extreme sides which are supporting facilities to the main hall. Plate XXVI shows the image and state of one of the seminar rooms at the centre



Plate XXVI: Seminar room
Source: Author's field work

4. Dressing room/offices: Dressing rooms are provided at the back stage of the hall with offices too on the ground floor, first and second floor respectively.
5. Other facilities: The other facilities here include the rest room, rehearsal room, storage room, changing room, meeting room and offices around the hall, also a press room and a control room and parking space.

4.2.3 Findings from Visual Survey

4.2.3.1 Accessing user experience points at Cyprian Ekwensi centre for art and culture, Abuja

User experience points are used to check design considerations done in the Centre for art and culture for enhanced user experience.

Table 4.3. User experience points in centre for art and culture, Abuja

Note that 4-very strong, 3-strong, 2-weak and 1-absent.

User experience points	**Level of reflectance**	**Remarks**
Displayed features for enhancing experience on point of arrival various entrances	3	Series of steps were used to form a threshold at the entrance or front of the building. Accessibility to the site is with the use of urban mass transit taxi. More so, clear pedestrian and vehicular circulation ways was done but however, pedestrian paths were not shaded to shade visitors from harsh climate conditions.
Features for social experience and shared experience	2	Facilities for enhancing social and shared experience were lacking. Although Provisions were made for outdoor and indoor restaurants alongside the provision of a courtyard that allows for social gathering.
Features for theatrical experience (room experience)	1	The auditorium design was without considerations for acoustic and efficient lighting.

4.2.3.2 Accessing the application of built form principles

The built form principles checked in the National theatre are documented in the table below:

Table 4.4. Responsive design to built form principles

Note that 4-very strong, 3-strong, 2-weak and 1-absent.

Built form principles			**Level of reflectance**	**Remarks**
Building configuration	a	Spatial organisations along axis or circulation paths	3	Spaces were arranged around circulation roads and lobbies which served as axis line, granting access into and out from the centre.
	b	Hierarchy of functional spaces	4	Hierarchy of spaces was not evident in the building form as no distinctive features were used to mark spaces.
	c	Datum/building relationship to surrounding spaces	3	Datum/building relationship surrounding the art and culture centre is with the use of a fence, major roads around the site and green areas.
	d	rhythm	2	Some level of rhythm was achieved with the repetition of window hoods on the exterior walls
	e	symmetry	3	The centre for arts and culture exhibits balance with the symmetrical arrangement of its activity sections. See plate XXVII for site layout showing the symmetrical arrangement of spaces.
	f	Transformation/flexibility of spaces	3	The centre exhibits potentials for future expansion because of the organisational development of various spaces.
Climate responsive design strategies			2	Effective admittance of natural lighting and ventilation into the offices, seminar room and dressing rooms. See plate XXVIII for daylighting into office space, for use of window hood to shade building from direct solar radiation and for use of soft landscape to reduce heat gain in the building.
Circulation and services			3	Vehicular and pedestrian circulations are provided upon reaching the site and leading persons to the main entrance point. At the interior, a central courtyard is provided and accessibility to other spaces is via this courtyard. Staircases are used for vertical circulations. However, parking lots were only provided for vehicles and buses thus, living no parking provision for Moto-cycles, bicycles and tri-cycles.
Cultural expression on building			2	Local art paintings are seen on the walls of the art centre with sculptures at some places. See plate XXIX for illustration of art carvings.



Plate XXVII: layout of Centre for arts and culture, Abuja
Source: Google image (2015)

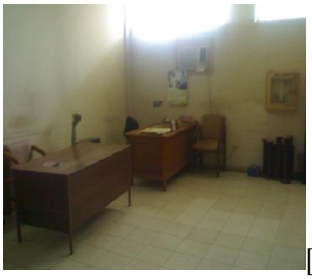
[a]  [b]  [c] 

Plate XXVIII: [a] Technicians office, [b] window hood and [c]landscape work
Source: Author's field work



Plate XXIX: Local art painting on walls
Source: Author's field work

4.3 Findings at U.K. Bello Arts Theatre, Minna



Plate XXX: U.K. Bello arts theatre, Minna
Source: Author's field work

CLIENT:	Nigerian Government
LOCATION:	Minna, Niger state
CONTRACTORS:	
CONSTRUCTION DATE:	May 25th 1991
CONSTRUCTION MATERIAL:	Concrete, glass and steel
CLIMATE:	Tropical

4.3.1 Background

The Theatre which is owned by the Niger State government was commissioned in 1991 as an arts centre in the state capital by General Ibrahim Badamasi Babangida; the complex consists of an administrative unit, a theatre, gallery, craft shop and a recreational centre. Figure 4.5 shows the floor plan of the theatre with the space arrangements.

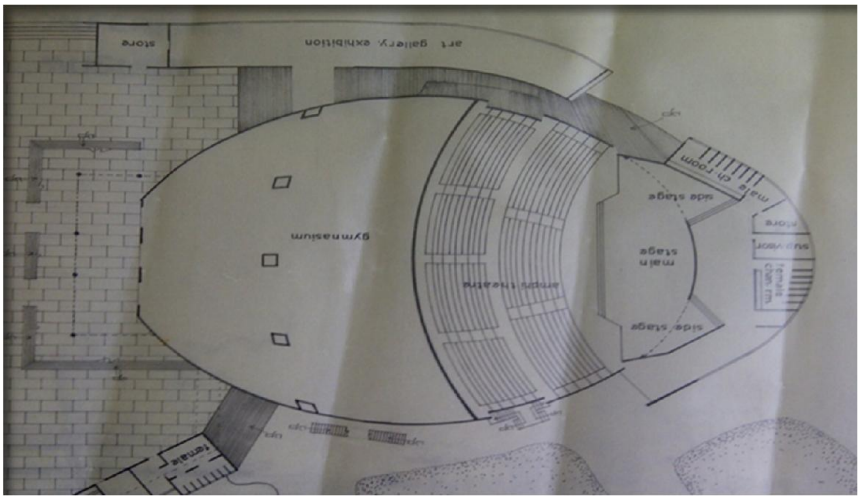


Figure 4.5: Floor plan
Source: Author's field work

4.3.2 Description/ Room Characteristics

1. ENTRANCE: The theatre has a main entrance to the front directly facing the car parking area which is accessed through a shaded walk path and leads to a welcoming lobby, before gaining access into the hall. Plate XXXI shows the major entrance into the U. K. Bello arts theatre



Plate XXXI: Entrance to U.K. Bello theatre
Source: Author's field work

2. HALL: The auditorium has a proscenium stage with supporting facilities like the gymnasium, auditorium, backstage, stage, conveniences and offices. Plate XXXII shows the interior of the auditorium with the type of seating arrangement.

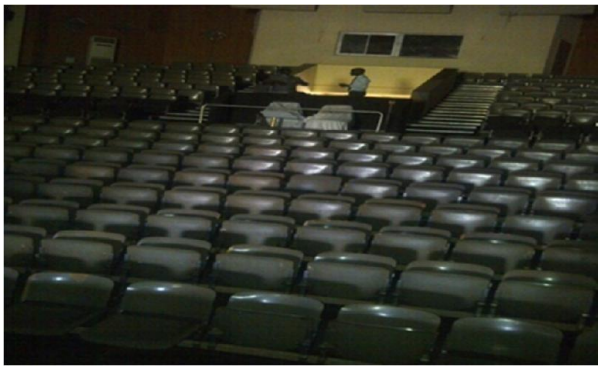


Plate XXXII: Auditorium
Source: Author's field work

3. Gymnasium: The gymnasium is located just before the main entrance to the hall and serves as the welcoming lobby at the same time. Plate XXXIII shows the nature of the gymnasium which is been accessed by users that come into this building.



Plate XXXIII: Gymnasium
Source: Author's field work

4. DRESSING ROOM/OFFICES: Dressing rooms are provided at the back stage of the hall with some offices.
5. OTHER FACILITIES: The other facilities here include the rest room, rehearsal room, storage room, changing room, meeting room and offices around the hall, also a control room, s state museum, craft and art shop and parking space.

4.3.3 Findings from Visual Survey

4.3.3.1 Accessing user experience points at U.K. Bello Arts theatre

User experience points are used to check design considerations done in U.K. Bello arts theatre. Thus, the findings are documented in the table below

Table 4.5. User experience points in U.K. Bello arts theatre

Note that 4-very strong, 3-strong, 2-weak and 1-absent.

User experience points	**Level of reflectance**	**Remarks**
Displayed features for enhancing experience on point of arrival various entrances	2	Facilities to enhancing experience at the arrival point were not present. However, adequate parking spaces were provided with a shaded walk path to the main entrance of the theatre. See plate XXX above for the features enhancing experience on arrival.
Features for social experience and shared experience	2	Social experience facilities were only provided for on the lobbies and circulation path. However, social experience facilities to engage visitors on point of entry to the theatre were not provided.
Features for theatrical experience (room experience)	3	The facility to enhance theatrical room experience was done and is evident in the presence of acoustic considerations and appropriate lighting fixtures. See plate XXXII for character of theatre seating which enhances theatrical experience.

4.3.3.2 Accessing the application of built form principles

The built form principles checked in the National theatre are documented in the table below:

Table 4.6. Responsive design to built form principles

Note that 4-very strong, 3-strong, 2-weak and 1-absent.

Built form principles			**Level of reflectance**	**Remarks**
Building configuration	a	Spatial organisations along axis or circulation paths	3	Spatial organisation along an axis of circulation was achieved as seen in the arrangement of space from the entrance of the site to the entrance of the main building.
	b	Hierarchy of functional spaces	2	Hierarchy of spaces was not evident in the building form as the building form didn't stand out among other buildings. However hierarchy of space was achieved for individual space within

Built form principles			Level of reflectance	Remarks
	c	Datum/building relationship to surrounding spaces	3	Datum/building relationship surrounding the U.K.Bello arts theatre is with the use of a fence, major roads around the site and green areas.
	d	rhythm	1	Use of rhythm or repetition of architectural elements was not used on the theatre.
	e	symmetry	2	Some level of symmetry was achieved from the plan organisation of the theatre. Plate XXXIV is a layout of the theatre showing evidence of symmetry in the form.
	f	Transformation/ flexibility of spaces	1	The building form of the centre does not exhibit any room for future expansion on the building and the site.
Climate responsive design strategies			3	Effective admittance of natural lighting and ventilation into the office, craft shop and welcome lobby. See plate XXXV for image showing natural lighting and ventilation in the craft shop.
Circulation and services			3	Vehicular and pedestrian circulations are provided upon reaching the site and leading persons to the main entrance point. At the interior, circulation is through lobbies and provided stair cases. Plate XXXVI shows a covered pedestrian walk path.
Cultural expression on building			2	Local art paintings are seen on the walls of the theatre. However places for local gatherings were not provided.



Plate XXXIV: Site layout of U.K. Bello arts theatre
Source: Google image (2014)



Plate XXXV: Daylighting in craft shop
Source: Author's field work



Plate XXXVI: Shaded walk path
Source: Author's field work

4.4 Summary of Case Study Findings

The case study findings are summarised in the table below.

Table 4.7. Summary of findings

Note: National art theatre is abbreviated as N.A.T, Centre for art and culture is abbreviated as CA&C while U.K.Bello theatre is abbreviated as U.K.B.T.

User experience points	**Level of significance**				**remarks**
	N.A.T	CA&C	U.K.B.T	**Total**	
Arrival experience point	2	3	2	7	It will be important to note that the overall theatrical experience should cater for user experience at various experience points. To this end, all the cases were able to provide for an overall theatrical experience that is medium on the grade scale as such, critical considerations for user experience points will be emphasised on.
Social experience point	2	2	2	6	
Theatrical room experience	3	2	3	7	
Built form principles	N.A.T	CA&C	U.K.B.T	**Total**	remarks
Building configuration	3	3	2	8	All three (3) of the buildings to an extent have an organised arrangement of their forms and spaces. Thus, these qualities will be adopted in the proposed design.
Climatic responsive design:	2	2	3	7	All three (3) buildings were built having consideration of climate in mind. However all the buildings still had their back stage areas not lighted with natural lights, as such natural light considerations for the back stage areas will be effected in the proposed design.
Circulation and services	3	3	3	9	Vehicular and pedestrian circulation should were provided in all three (3) buildings and in the interior, circulation systems were provided for.
Design for cultural expression	2	2	2	6	Use of art cravings, sculptures, and paintings were present in all three (3) case studies. However, traditional space should be implored to signify cultural symbolism of the locality.

Note that 4-very strong, 3-strong, 2-weak and 1-absent.

4.5 FINDINGS FROM INTERVIEW

Interviews were conducted by the researcher to individuals in the entertainment industry in Jos. Thus, the following data obtained is documented in the table below.

Table 4.8. Summary of interview survey

Note: A is used for Agreed while DA is used to signify Disagreement to the question posed.

Questions	Respondents				Remarks
	1st interviewee		2nd interviewee		
	A	DA	A	DA	
New trends in the performing arts	•		•		There is need to incorporate supporting facilities with design considerations for enhance experience for the users of the facility as whole.
Availability of centres		•		•	
Experience with facilities and audience		•		•	
Facilities considered for enhanced experience		•		•	

4.6 Findings from Questionnaire Survey

SECTION I

DEMOGRAPHIC DETAILS

1. Gender:

Table 4.9. Data of users' gender

	Respondents			Cumulative
	U.K.B.T	N.A.T	CA&C	
Male	18 (58.1%)	20 (58.8%)	20(57.1%)	58(58%)
Female	13 (41.9%)	14 (41.2%)	15(42.9%)	42(42%)
Total	31	34	35	100

2. Age:

Table 4.10. Data on age group

	Respondents			Cumulative
	U.K.B.T	N.A.T	CA&C	
20-	1 (3.2%)	5(14.7%)	3(8.6%)	6(6%)
21-30	11 (35.5%)	12(35.3%)	11(31.4%)	34(34%)
31-40	5 (16.1%)	5(14.7%)	6(17.1%)	16(16%)
41-50	6 (19.4%)	6(17.6%)	7(20%)	19(19%)
51-60	4 (12.9%)	5(14.7%)	4(11.4%)	13(13%)
60+	4 (12.9%)	1(3%)	4(11.4%)	12(12%)
Total	31	34	35	100

3. Marital status:

Table 4.11. Data of marital status

	Respondents			Cumulative
	U.K.B.T	N.A.T	CA&C	
Single	15 (48.4%)	17(50%)	17(48.6%)	49(49%)
Married	16 (51.6%)	17(50%)	18(51.4%)	51(41%)
Total	31	34	35	100

4. Profession:

Table 4.12. Data of profession

	Respondents			Cumulative
	U.K.B.T	N.A.T	CA&C	
student	13 (41.9%)	15(44.1%)	15(42.9%)	43(43%)
Public servant	2 (6.5%)	2(5.9%)	2(5.7%)	6(6%)
Private service	8 (25.8%)	8(23.5%)	10(28.6%)	26(26%)
Own business	8 (25.8%)	9(26.5)	8(22.9%)	25(25%)
retired	0	0	0	0
unemployed	0	0	0	0
others	0	0	0	0
Total	31	34	35	100

5. Area of residence:

Table 4.13. Data of area of residency

	Respondents			Cumulative
	U.K.B.T	N.A.T	CA&C	
Urban	24 (77.4%)	26(76.5%)	27(77.1%)	77(77%)
Rural	7 (22.6%)	8(23.5%)	8(22.9%)	23(23%)
Total	31	34	35	100

6. over the last 12 months, roughly how many times have you been to a performing arts centre?

Table 4.14. Data of user visitation to performing arts centre

	Respondents			Cumulative
	U.K.B.T	N.A.T	CA&C	
0	0 (0%)	0	0	0
1-3	17 (54.8%)	18(52.9%)	22(51.4%)	53(53%)
4-10	14 (45.2%)	16(47.1%)	13(48.6%)	47(47%)
11+	0 (0%)	0	0	0
Total	31	34	35	100

SECTION 2

USER BEHAVIORTO PERFORMING ARTS CENTRE ACTIVITIES

6. What theatre events are you most likely to attend? Please tick all that apply

Table 4.15. Data for user's variations to performing arts centre activities

	Respondents			cumulative
	U.K.B.T	N.A.T	CA&C	
music	22 (13.9%)	24(14%)	26(74.3%)	72(72%)
drama	22 (13.9%)	23(14.1%)	23(65.7%)	69(69%)
banquette	24 (15.2%)	27(22%)	28(80%)	78(78%)
dance	11 (7.0%)	17(8.1%)	13(37.1%)	37(37%)
Traditional. Dance	14 (8.9%)	10(7.6%)	15(42.9%)	43(43%)
concerts	24 (15.2%)	26(15.1%)	28(80%)	78(78%)
comedies	23 (24.6%)	22(14.5%)	25(71.4%)	73(73%)
Street. Performance	18 (11.4%)	23(11.6%)	15(42.9%)	53(53%)

7. Does any of the following serve as a motivation for you coming to performing arts centre? Please tick all that apply

Table 4.16. Data for user's motivation on performing arts centre activities

	Respondents			cumulative
	U.K.B.T	N.A.T	CA&C	
Comfort	16 (51.6%)	18(52.9%)	19(54.3%)	53(53%)
Recreational	28 (90.3%)	31(91.2%)	31(88.6%)	90(90%)
meeting	26 (83.9%)	27(79.4%)	28(80%)	81(81%)
Family get together	15 (48.4%)	17(50%)	19(54.3%)	51(51%)
	31	34	35	

8. Which of the following is likely to stop you from attending theatre functions? Please tick all that apply

Table 4.17. Data for hindrances to attending performing arts centre activities

	Respondents			cumulative
	U.K.B.T	N.A.T	CA&C	
Location	22 (71.0%)	23(67.6%)	32(91.4%)	77(77%)
Parking	19 (61.3%)	20(58.8%)	21(60%)	60(60%)
Nature of hall	23 (74.2%)	26(76.5%)	21(60%)	70(70%)
Type of stage	21 (67.7%)	22(64.7%)	20(57.1%)	63(63%)
Supporting failities	17 (54.8%)	19(55.9%)	17(48.6%)	53(53%)

9. How often do you go to performing arts centres with other people?

Table 4.18. Data of user's participation to performing arts centre activities

	Respondents			cumulative
	U.K.B.T	N.A.T	CA&C	
VO	7 (22.6%)	8(23.5%)	16(17.1%)	21(21%)
O	17 (54.8%)	18(52.9%)	8(51.4%)	53(53%)
NSO	7 (22.6%)	8(23.5%)	11(31.4%)	26(26%)
NA	0(0%)	0	0	0
	31	34	35	

SECTION 3

USER ATTITUDE TOWARDS PERFORMING ARTS CENTRE

11. Please mark a point on the scale towards whichever is closest to your experience while coming to this performing arts centre?

Table 4.19. Data on users' experience while coming to the performing arts centre

		Responses			cumulative
		U.K.B.T	N.A.T	CA&C	
1	Bad experience	0 (0%)	0	0	0
2	Somewhat bad	9 (29.0%)	13(29.4%)	11(31.4%)	30(30%)
3	Neutral	18 (58.1%)	19(55.9%)	17(48.6%)	54(54%)
4	Somewhat interesting	4 (12.9%)	5(14.7%)	7(20%)	16(16%)
5	Awesome experience	0 (0%)	0	0	0
		31	34	35	100

For each of the following please rate how well they impact on your overall experience of a performing art centre: With 1- rating at not at all effective and 5- rating at extremely effective

Table 4.20. Data for user's judgement of performing arts centre

		Responses															Total% effectivenes
		u.k.b.t					n.a.t					Ca&c					
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
12	location		4	4	23			5	4	25			5	5	24		74% effective
13	Parking	4	15	5	11			16	6	12			5	6	14		62% effective
14	Landscape	18	1	12	17	4		18	2	12			17	8	10		47% effective
15	Circulation		11	17	3			11	19	4		2	15	4	14		93% effective
16	Form		13	4	12			13	4	14	3		14	8	10	3	88% effective
17	Entrances		16	3	12			16	3	15			17	9	9		82& effective
18	Auditorium		11		20			12		22			11	4	20		96% effective
19	Sitting		0		32			24	5	1	1		2		28	5	100% effective
20	Stage		8		23			9	2	23			11		24		72% effective
23	Rest room		14		17			12	4	18			18		15	2	50% effective
22	Retail facilities	4	16		9	2	5	20	1	6	2		4	24	7		71% effective
23	Way finding		13	8	10			15	9	10			18	8	9		71% effective

4.7 DISCUSSIONS

Findings from literature review reveals principles and strategies which when implored will enhance the user experience in the performing arts centre. In addition, the concept of user experience reveals measures on how to evaluate the user experience in buildings thus, the discussion will follow each research question in the study.

4.7.1 Research question 1:

How can user experience be measured in buildings?

Findings from literature reveal measures on how to evaluate user experience in buildings, which covers the use of survey studies (self-administered questionnaires)

and interviews. Thus a checklist was developed to determine the extent to which user experience is considered in some selected case studies.

4.7.1.1 Findings from questionnaire survey:

The results from the survey are split into three (3) sections which make up the three (3) sections of the questionnaire and are discussed in the table 4.21 below

1. Introductory questions (demography)
2. Behavioural questions (section 2 questions)
3. Attitude questions (section 3 questions)

Table 4.21: Discussion of questionnaire finding

s/n	Sections	Remarks
1	Section 1 (Introductory questions)	The introductory question goes a long way to show a good cross-section of participants were surveyed. See figure 4.7 for the data of male and female persons that were surveyed.
2	Section 2 (behavioural questions)	The data gotten here goes a long way to show that there is a need to provide flexible centres that can accommodate various activities with various places for social interactions and waiting areas.
3	Section 3 (Attitude questions)	The responses on user judgement of the various factors that impact on their overall experience suggests that, there is need to make careful considerations for the placement of a performing arts centre by observing some of the built form principles discussed in the literature review and also, more considerations for the design of facility spaces.

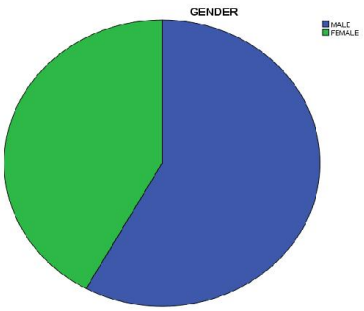


Figure 4.6: Floor plan
Source: Author's field work

4.7.2 Research question 2:

To what extent can architectural form affect user experience in buildings?

Findings from literature reveal how built form principles affect user experience as users are able to experience the form or building through a sequential flow or movement through the architecture. On this note, a checklist was developed to check for these principles and strategies on the selected case studies.

4.7.2.1 Findings from case studies:

The case studies reveal to some extents built form strategies implored, but however little or no considerations for user experience points were been done at relevant stages within the buildings. Thus, these issues are addressed and put into the design consideration of various spaces in the proposed performing arts centre.

See table 4.5 for summary of case study findings and recommendations.

4.7.3 Research question 3:

What are the key contemporary developments in design of architecture for theatre art performance?

Findings from literature reveal new trends in the performing arts which influences new forms of performing art spaces. The study reveals the conception of new spaces (spaces for children, nursing mothers, amongst others) to impact on the character of a performing art centre. Also, a finding from interview answers the research question three (3) and is discussed in the sub chapter below.

4.7.3.1 Findings from interview schedule:

The interview schedule administered to respondents reveals striking and parallel results for artist/performers experience in theatre practice. See Table 4.8. Thus, the factors discussed upon reveal that critical design consideration and proper design of stage and backstage area play a major role on the overall user experience.

4.8 Development of Design Framework for User experience in Performing Arts Centre

Data gotten from relevant literature and fieldwork can be summarised to provide the right effect or impact on user experience within the performance arts centre. To this end, a framework is developed to guide the development and design of the proposed performance arts theatre, taking into consideration the user experience at various stages of the design. Table 4.22 shows a matrix for the design framework which is formed with consideration on various experience points and building scale.

Table 4.22. Framework for performing art centre design

	principles / Experience points	Site scale	Building scale	Room space
1	Arrival experience			
2	Social/shared experience			
3	Theatre room experience			

The categories along the experience points side of the matrix generalise a typical performance art centre space into its major points of experience that make up the overall theatrical experience, individual and group work, as well as movement from one activity to the other while, the categories for the built form principles considers the experience of the user with relation to space and the building form strategy been applied.

4.8.1 Categories on the experience points

1. Arrival experience:

   The arrival experience category explores points of experiences as the occupant approaches the performing arts centre, moves throughout the site and buildings and at points where there will be need for social and shared experience points. These would include spaces like outdoor gardens, waiting, interesting facades, and entrances within and outside the buildings, landmarks, outdoor gathering, and efficient vehicular and pedestrian flow, proximity of spaces.

2. Social/shared experience points

   The social experience point category explores points of experiences as the user encounters other users, whether by spontaneous gathering or in a formal meeting or in the performance hall. These spaces include:

   i. Formal social gathering: Auditorium, banquette halls, conference and meeting rooms.
   ii. Informal social gathering: Wide hallways, restaurants, and so on
   iii. Spontaneous conversations: Stairs cases and lifts.
   iv. Casual conversations: Lounge rooms, rest rooms, ticket and other sales points
   v. Informal meetings: Outdoor areas, courts and gardens.

3. Theatre room experience:

   The theatre room experience category explores points of experiences within the theatre halls or gathering spaces with considerations on acoustic, visual experience, comfort and escape, in cases of fire outbreaks. These considerations are done to achieve good acoustic and visual experience, which

joint together make up the theatre room experience. These spaces include: auditorium, stage/platform, Offices, rehearsal and recording studios.

4.7.2 Categories for the built form principles

1. Site scale:

   The site scale explores the idea of how the users experience is to be considered in relationship to, gardens, outdoor rooms, and sense of place, climate, landscape and heritage.

2. Building scale:

   The building scale explores the idea of how the users experience should be considered in relation to, organisation of spaces, effects of social conditions, journey through space, way finding and overall sensory conditions.

3. Room scale:

   The room scale explores the idea of how the user experience should be considered in relationship with the following;

   i. Direct contact with services/ facilities
   ii. Ability to concentrate and engage in the activity within the hall
   iii. Control over localised comfort facilities
   iv. Effects on social moments, individual and emotional states.

The matrix for the design framework further provides a sequential flow to spaces on the built form scale and thus, each scale will cater for a particular experience for users which in a long run provides an experiential journey for users.

The matrix for design framework can further be summarised in the form a schematic diagram, showing relationship between the activity group and scale group. Figure

4.10 presents a schematic approach used in developing the design framework to be used in the design of performing arts centres.

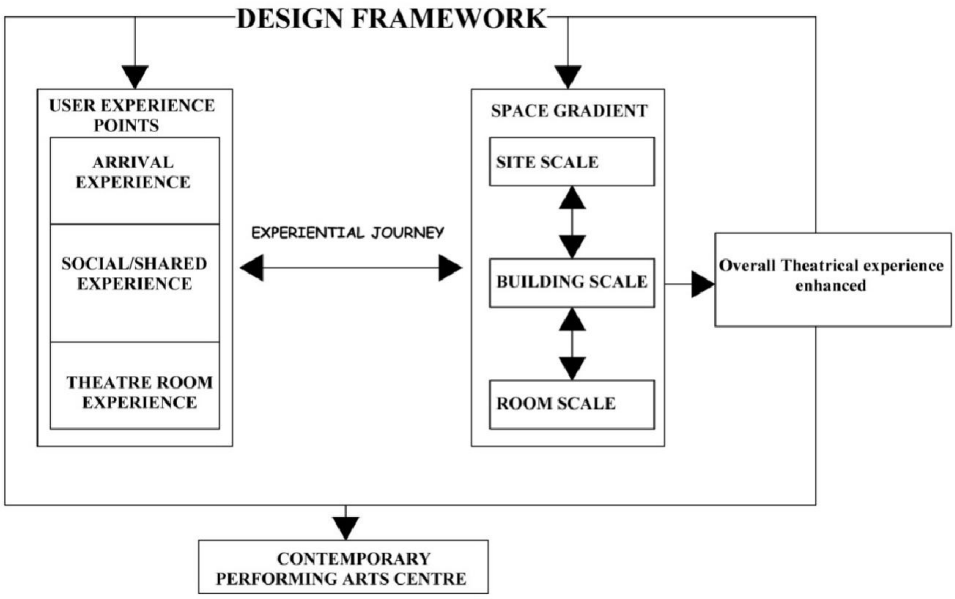


Figure 4.6: Design framework
Source: Author, 2014

CHAPTER FIVE

5.0 DESIGN CRITERIA

5.1 Site Location

The Performance art centre is to be located in Jos, Plateau state capital. Its coordinates are 9°53'05"N and 8°55'26"E with a total area of 159.9 km². Plateau state is found in the central region of Nigeria and it lies in the tropical zone, it occupies 226,899km² and shares common boundaries with Bauchi at the north and north-east, Taraba to the south-east, Nasarawa on the south-west and Kaduna on the north-west respectively. Figure 5.1 shows the map of Nigeria with the location of Jos, Plateau State in orange.



Figure 5.1: Map of Nigeria
Source: http://plateaunews.com.ng (2015)

5.2 Climatic Data of Site

Plateau state is located in the tropical zone. However, the climate of the state ranges from semi-arid in the north (Jos inclusively) and hot-humid at the southern part, as such the climatic region of the site falls in the semi-arid (dry) zone. It encompasses amountainous area with bare rocks scattered across the grass land (guinea savannah). A high altitude means that the state has a near temperature climate with an average

18°c and 22°c. Harmattan winds cause the coldest weather between December and February while the warmest temperatures usually occur in the dry season months of March and April. The mean annual rainfall varies from 131.75cm in the southern part to 146cm on the plateau. However, the highest rainfall is recorded during the wet season months of July and AugustFigure 5.2-5.4, shows this data.

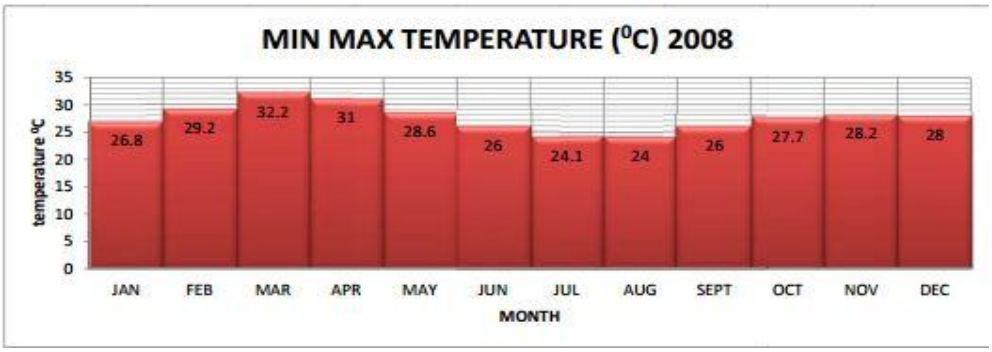


Figure 5.2: Temperature data for Jos
Source: NIMA, Jos Inspectorate (2009)

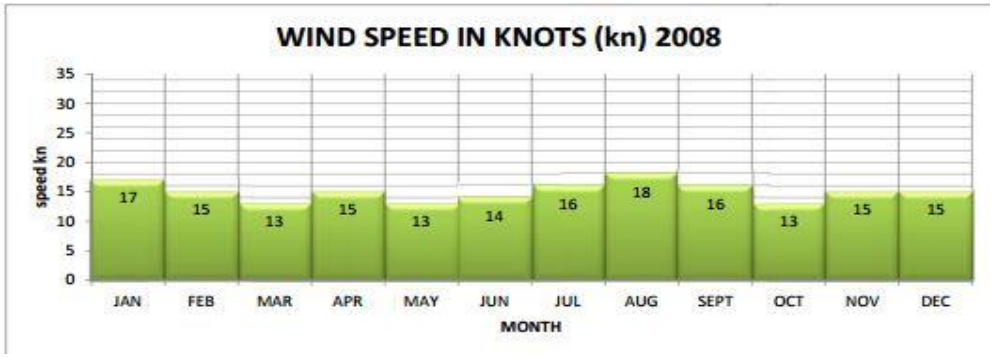


Figure 5.3: Temperature data for Jos
Source: NIMA, Jos Inspectorate (2009)

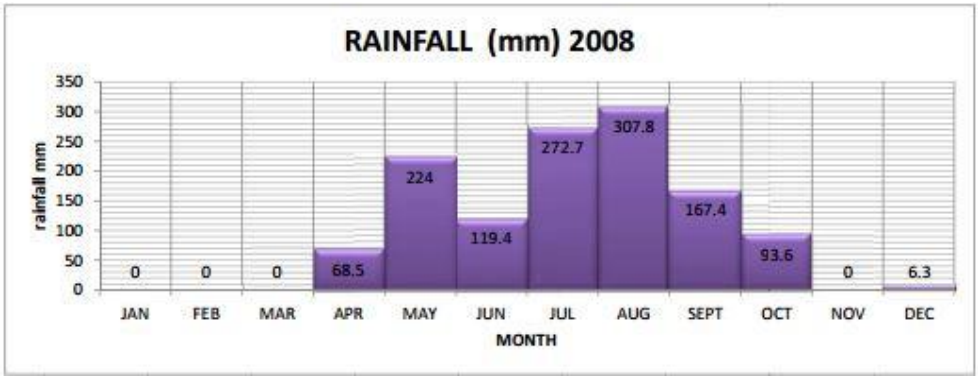


Figure 5.4: Temperature data for Jos
Source: NIMA, Jos Inspectorate (2009)

5.3 Site Selection Criteria

Appleton (2008) reveals the following (Universities, drama and music schools, conference centres, tourism buildings, restaurants and bars, hotels, recording, radio and television studios, specialist shop amongst others) facilities to be effective for selecting sites for performing art centres. Thus, these factors are used in selecting the proposed site for the design of a performance art centre.

Three sites were chosen from Jos metropolis in Plateau state as seen in plate LXIXand will be weighed based on Appleton's considerations in order to select the most appropriate site.

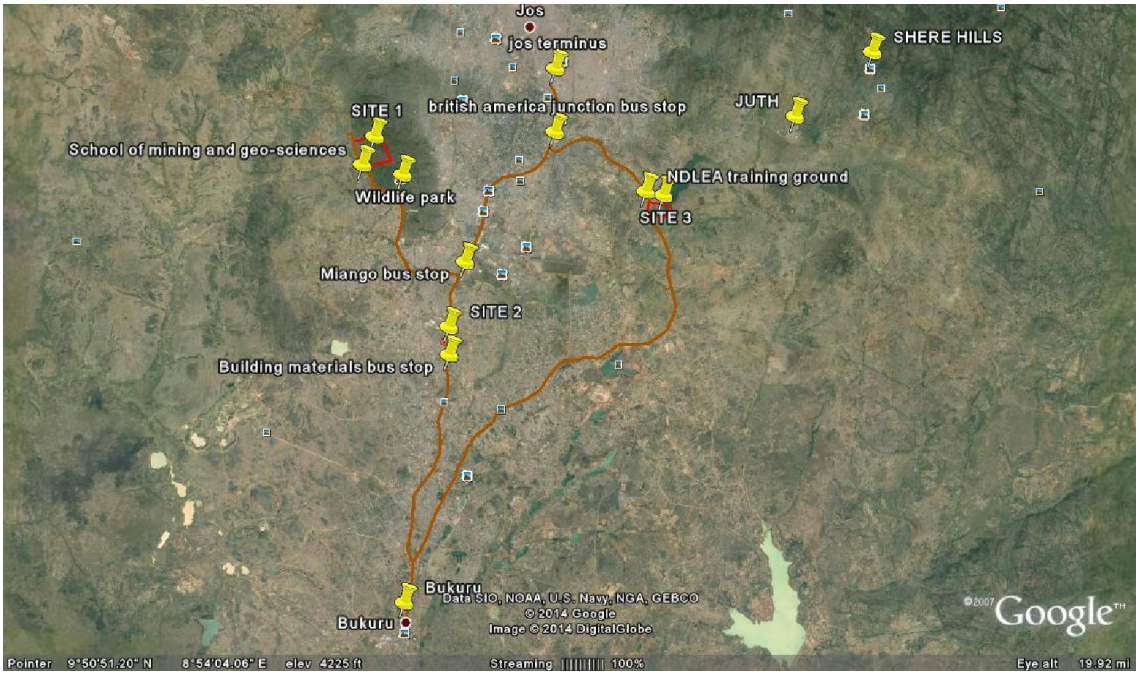


Plate XXXVII: The selected sites
Source: Google earth, 2014

5.3.1 Site One

This area is located in Dung, Jos north LGA of Plateau state. It is in close proximity to the School of Mining and geo-science, Wild-life Park and Federal low-cost housing

area in Jos. The site is accessible by road through Miango junction that branches off Bukuru-Terminus express way.

5.3.2 Site Two

This area is located in DadinKowa, Jos south LGA of Plateau state. It is in close proximity to the Air Force girl's comprehensive school, Building materials market and Yelwa club in Jos. The site is accessible by road, off Bukuru-Terminus express way.

5.3.3 Site Three

This area is located in Lamingo, Jos east LGA of Plateau state. It is in close proximity to the Famous lamingo dam, NDLEA training ground, Shere hills and the Jos University Teaching Hospital (JUTH). The site is accessible by road through British American junction that branches off Bukuru-Terminus express way.

Based on the listed criteria, a quantitative result was derived and the best site was selected. The rating is as follows: 5 for most appropriate; 4 for appropriate; 3 for moderately appropriate; 2 for not appropriate; and 1 for least appropriate.

Table 5.1. Site selection criteria

CRITERIA	SITE ONE	SITE TWO	SITE THREE	REMARKS
Proximity to residential areas	5	4	4	Site one has more proximity to residential areas
Proximity to quality hotels, restaurants, shopping and hospitals.	2	3	5	Site three has a closer proximity to hotels and attractions.
Proximity to attractions (scenic views)	2	4	5	Site one has more proximity to scenic views.
Distance from heavy traffic	4	2	5	Site two faces more traffic due to its closeness to residential and commercial areas.
Proximity to airports	3	5	4	Site two has more proximity to the airport
Proximity to dance and music schools (universities) and hall of residence	4	3	5	Site three has more expansion possibilities.

CRITERIA	SITE ONE	SITE TWO	SITE THREE	REMARKS
Proximity to conference facilities	3	4	5	Site three has more proximity to conference facilities
Proximity to recording, radio and television studios	4	2	5	Site three has more proximity to recording studios
Proximity to major landmark buildings.	4	3	5	Site three has more proximity to major land mark elevated structures
Size of site and possibility for expansion	5	3	5	Site one and two have more possibilities for expansion
Commercial potentials of surrounding site	3	4	5	Site three has more potentials for commercial activities occurring around the site
Visual and aesthetic potential of the site	3	5	4	Site two has more aesthetic potentials
TOTAL	42	42	57	The result shows that site three is more suitable.

From table 5.1, the most appropriate location for the conference centre is site three (3).

5.4 The Proposed Site

The site is located within Jos city metropolis in close proximity with other public buildings and it is approximately 12 acres. See figure 5.5 for site location map.

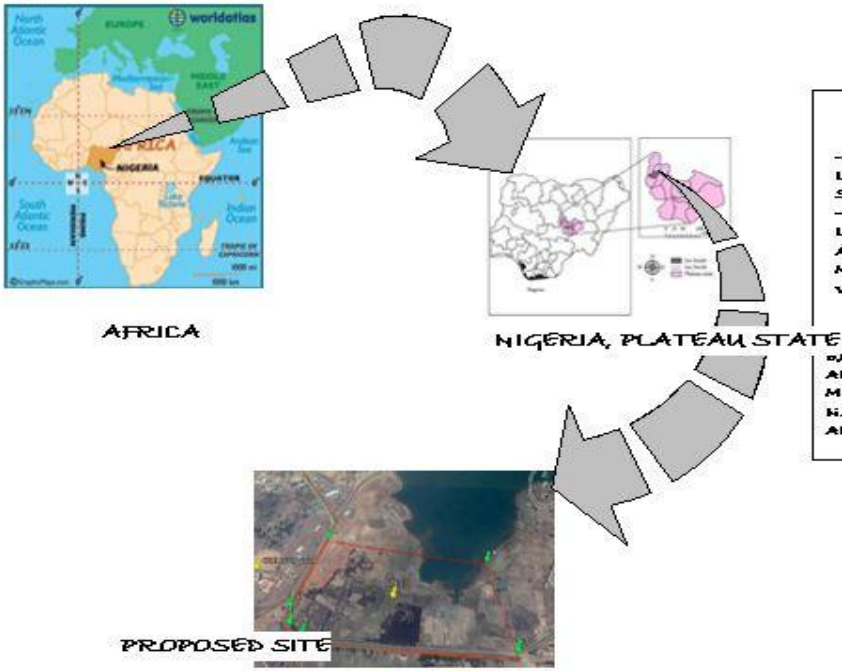


Figure 5.5: Site location map
Source: Author

The proposed site is relatively flat; it slopes gradually downwards from the South-West to the North-East towards the dam. There are no visible rock outcrops on the site, the soil is sandy loamy and covered with green short grass vegetation and interspersed shrubs.

5.5 Features Present on Site

The features present on the site are natural and manmade. However, these features were analysed in the following manner.

1. **Access:** The access into the site is from the existing roads on the southern and western sides of the site. Thus, main entrance into the facility is from the road on the south while service road will be tapped from the road on the western side.
2. **Vegetation:** The site is covered by a short green grasses with shrubs, this confirms that due to its position close to low land and water body, vegetation is mostly evergreen. Site to be well landscaped and trees planted and reduce solar radiation and avoid soil erosion.
3. **Utilities:** Existing electricity, water and telecommunications network are available around the site.
4. **Topography:** Low land with 0.5% gradient sloping towards theLamingo dam at the north-east end of the site.
5. **Air Movement:**
    i. North East Trade Winds: Tropical continental air mass which is dry, cold and dusty, influences harmattan. The wind velocity is very high and mostly occurs around in December to February. A proposal to apply soft landscape (Trees and shrubs) to be used as shield and air filter so as to curb the dust effect.

ii. South West Trade Winds: tropical maritime air mass which influences rainfall around April to October. This has influence on local climate as it is moist due to its development over Atlantic Ocean. Fenestration should best be in this direction to maximally harness the cool breeze for thermal comfort.

iii. Orientation of Buildings: Longer side of the building should face north-east direction to reduce hot discomfort. Due to solar radiation, shorter sides of the building should then be on the east- west sides.

The features present are however analysed in figure 5.6- 5.10 below with view to various factors surrounding the site.

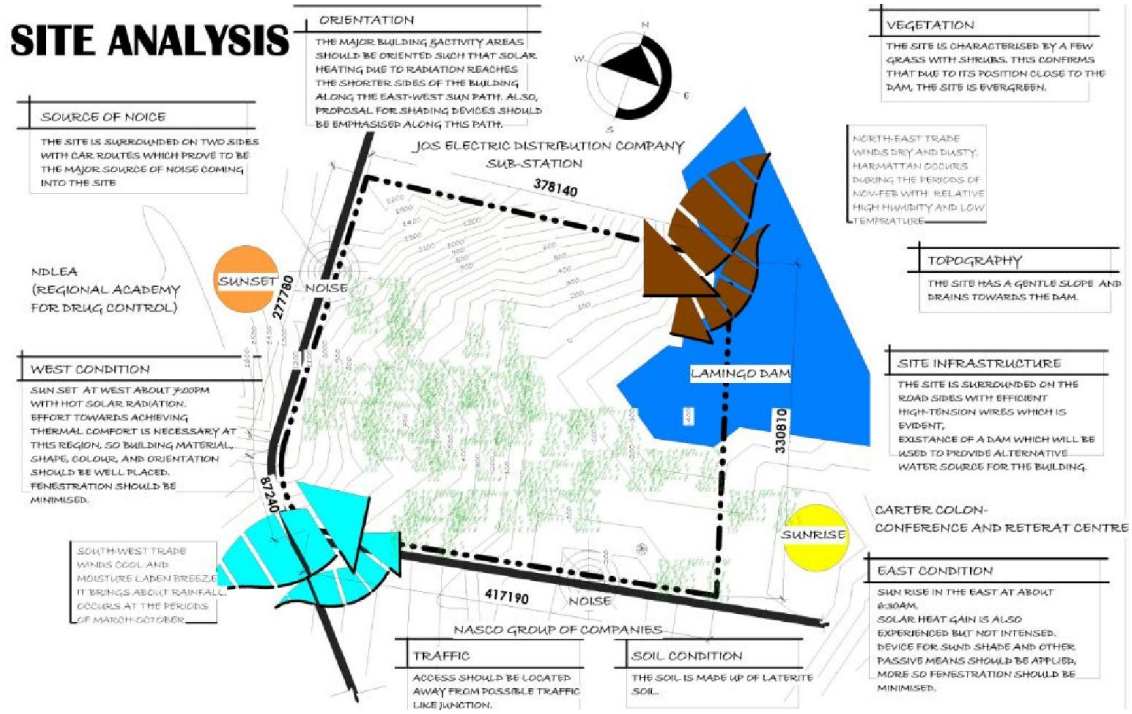


Figure 5.6: Site Analysis
Source: author's sketch, 2014

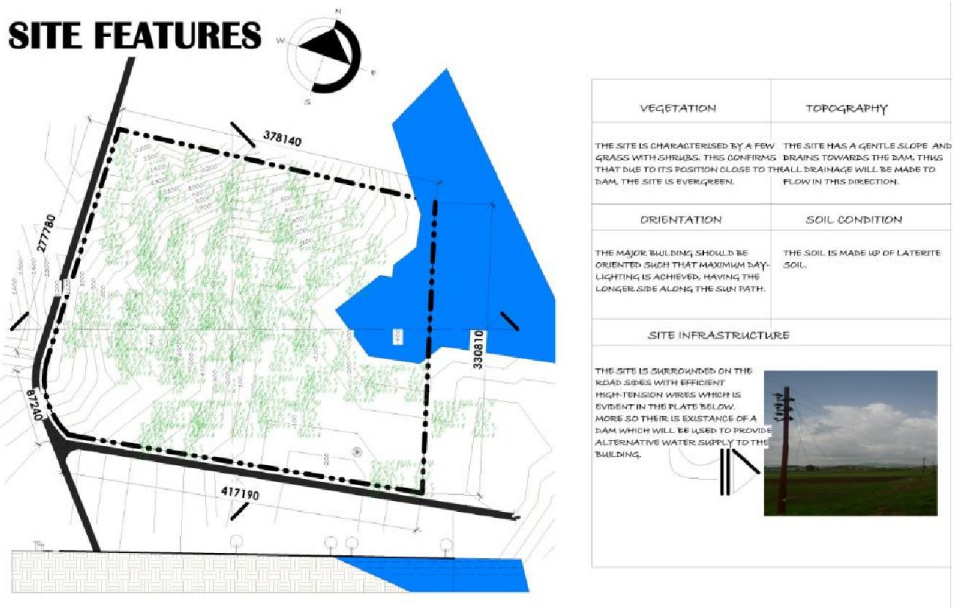


Figure 5.7: Site features analysis
Source: author's sketch, 2014

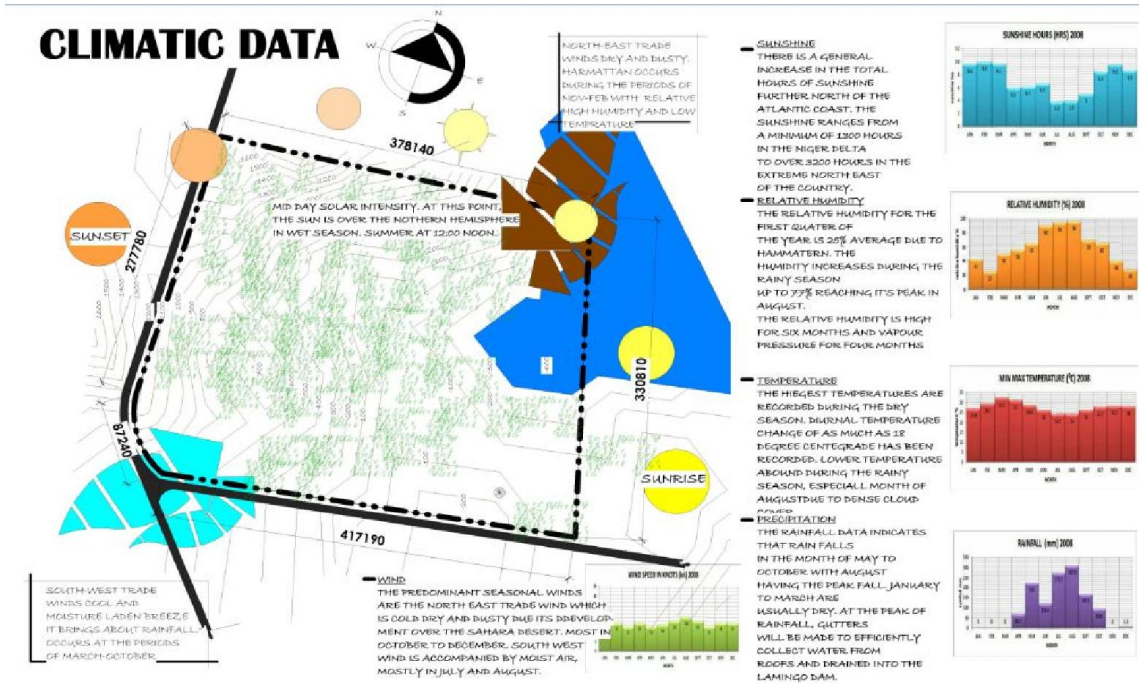


Figure 5.8: Climatic analysis
Source: author's sketch, 2014

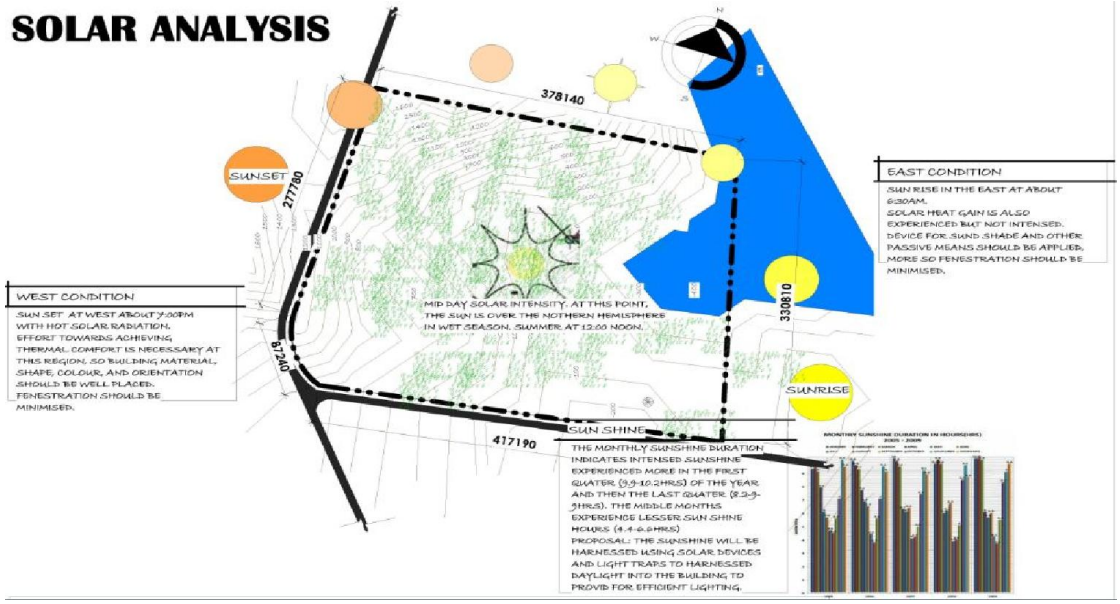


Figure 5.9: Solar analysis
Source: author's sketch, 2014

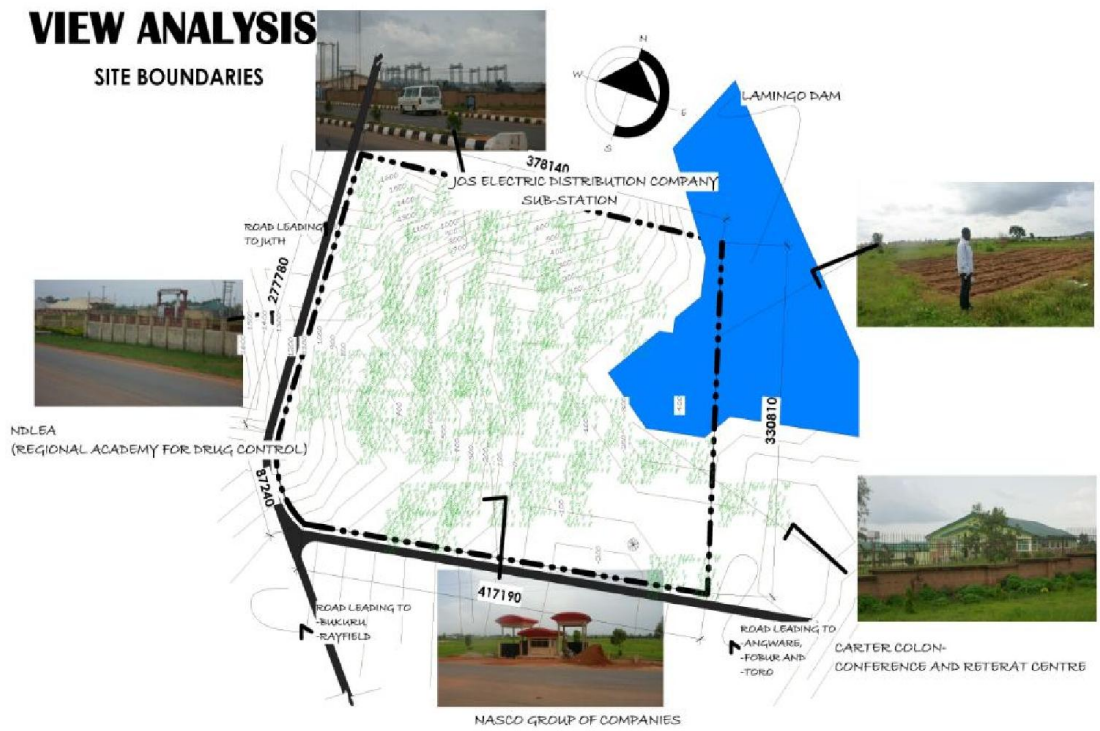


Figure 5.10: View analysis
Source: author's sketch, 2014

CHAPTER SIX

6.0 DESIGN REPORT

6.1 Background

In this chapter, a report is presented on the proposed performing arts centre to be located in Jos and is aimed at meeting the fifth (5^{th}) research objective which is: to demonstrate the outcome of this study in a proposed performing arts centre. To this end, the report is focused on documenting design strategies employed by the researcher in meeting this objective.

The report is presented in three (3) sections: design proposal and brief development; Architectural design; and Application of developed framework on proposed design.

6.2 Design Proposal and Design Brief

6.2.1 Design Proposal

The design proposal is for the Performing Musicians Employers' Association of Nigeria (PMAN) to serve as an establishment for a strong and virile association with the aim of promoting the interest of music and Nigerian musicians.

6.2.1 Design Brief

The PMAN group having realised the immense potentials in the music industry and having noted that these potentials are not being employed in the best interest of the entire musicians in terms of benefits and befitting venues, have resolve to developing a performing arts centre that will promote the interest of music and Nigerian Musicians.

The requirement entails the provision of the following

I. A performing arts centre that meets international standard

II. It should be iconic, artistic and expressive

III. The structure should serve as both an educational and entertainment centre

IV. Should house spaces for arts works, exhibitions, conferences, workshops, symposiums and banquettes

V. The centre should impact a well fulfilled experiential journey on its users.

The following organisations are additional sponsors

1. Nollyhood Nigeria
2. Society for the Performing Arts in Nigeria (SPAN)
3. The Nigerian Federal Government

6.3 Architectural Design

In this section, a report is presented on the general architectural design of the proposed performing arts centre. This section covers: Schedule of accommodation; functional flow diagram; design concept; site zoning; design consideration; site plan; floor plan; elevations; and building materials.

6.3.1 Schedule of Accommodation

The facilities and spaces proposed to be located in the performing arts centre are elaborated in the table below with the type of space, number required and total floor area.

Table 6.1: Schedule of accommodation

S/No	Spaces	Spaces req./activity ($m^{2)}$	No. Req	Total Area. ($m^{2)}$
1	**ADMIN AND EXHIBITION HALL**			
I	SERVICES			
	Drop-off	97	1	97
	Security/surveillance	25	2	50
	General lounge	51	1	51
	Store	77	1	77

S/No	Spaces	Spaces req./activity ($m^{2)}$	No. Req	Total Area. ($m^{2)}$
	convenience • Rest rooms • lobbies	 13 6	 6 6	 78 36
	Stairs and lift lobby	79	1	79
	Escape lobby	57	2	114
	Circulation lobby	251	2	502
II	EXHIBITION			
	Temporary exhibition	634	1	643
	Exhibition rooms	90	2	180
	Curators' office	26	3	78
III	LIBRARY SERVICES			
	Library	52	1	52
	Liberians office	14	1	14
	Entrance lobby	10	1	10
IV	ADMIN			
	Offices	26	4	104
	Public relations office • leasing officer • press room • Editing room • Reception/waiting room	 25 15 15 19	 1 1 1 1	 25 15 15 19
	Management board office	58	1	58
	Staff lounge • Lounge • Snack store	 51 25	 1 1	 51 25
	Traveling Agency			
	• Booking agency • Waiting hall	25 25	1 1	25 25
	Maintenance Department • Maintenance officer • Engineer's office • Waiting area	 15 15 18	 1 1 1	 15 15 18
2	**MAIN HALL**			
I	FRONT OF HOUSE			
	Drop-off/entrance	219	1	218
	Entrance hall	103	1	103
	Central lobby	1050	1	1050
	ATM lobby	32	1	32
	ATM room	15	3	45
	Security/surveillance	28	1	28

S/No	Spaces	Spaces req./activity ($m^{2)}$	No. Req	Total Area. ($m^{2)}$
	box office/ ticketing	32	2	64
	Snack shop	32	4	128
	Souvenir shop	24	2	48
	Travel agency	24	1	24
	Circulation lobby	732	1	732
II	RETAIL SERVICES			
	Restaurant/bar	122	2	244
	Kitchen • Cooking area • Wet store • Dry store • servery	 66 12 12 25	 1 1 1 1	 66 12 12 25
	Crèche • Reception • Waiting • Office • Playing and sleeping area	 8 25 14 76	 1 1 1 1	 8 25 14 76
	Convenience • Ladies • Gents	 13 12	 8 8	 104 96
	Recording studios • Booth • Engineering room • Waiting room	 87 11 28	 2 4 2	 174 44 56
	Waiting lounge	63	2	126
	Roof top relaxation spot	632	1	632
III	MAIN BOWL			
	Entrance lobby	50	1	50
	Auditorium	573	1	573
	Stage	207	1	207
	Conveniences • Ladies • Gents	 9 13	 10 10	 90 130
	General lounge	97	2	194
IV	BACK OF HOUSE			
	Back stage	162	1	162
	Instrument store	47	1	47
	Scenery • Scenery workshop • Scenery store	 74 47	 1 1	 74 47
	Reception/green room	124	1	124

S/No	Spaces	Spaces req./activity ($m^{2)}$	No. Req	Total Area. ($m^{2)}$
	Rehearsal spaces	131	1	131
	Costume store	35	1	35
	Conveniences • Ladies • Gents	 7 7	 4 4	 28 28
	Offices	35	7	265
	General office	48	1	48
	Group changing room	69	2	138
	Private changing room	30	6	180
	Booth	7	5	35
3	**BANQUETTE/MULTIPURPOSE HALL**			
	Drop-off	68	1	68
	Hall	704	1	704
	Stage	118	1	118
	Back stage	31	1	31
	Changing room	36	2	72
	Back stage entrance	43	1	43
	Office	35	1	35
	Store	35	1	35
	Kitchen • Kitchen lobby • Dry store • Wet store • Locker/changing room • Cooking area	 23 9 9 21 56	 1 1 1 1 1	 23 9 9 21 56

6.3.2 Functional Flow Diagram

The relationship between the facilities to be incorporated within the performing arts centre is shown with the aim of a bubble diagram in figure 6.1 below.

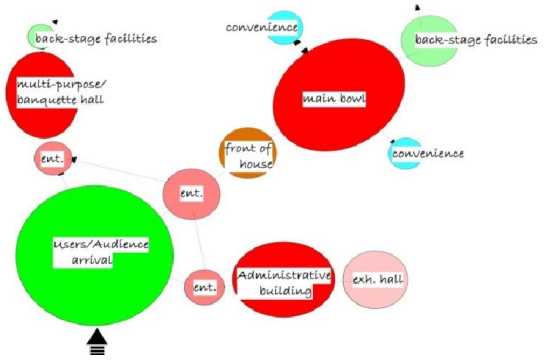


Figure 6.1: Functional flow diagram
Source: Author, 2014.

6.3.3 Design Concept

It will be important to note that the main concept of the design is the research aim which is: Evaluating the built form principles and how they can impact on user experiences in a performing arts centre. To this end, conceptual considerations are done to see that the research aim is achieved.

6.3.3.1 Site organisational concept

The site organisational concept adopts a close-open clustered organisation of spaces with focus on interaction, connectivity, access and shared communal spaces. See figure 6.2 below to see illustration for the organisation of spaces within the site.

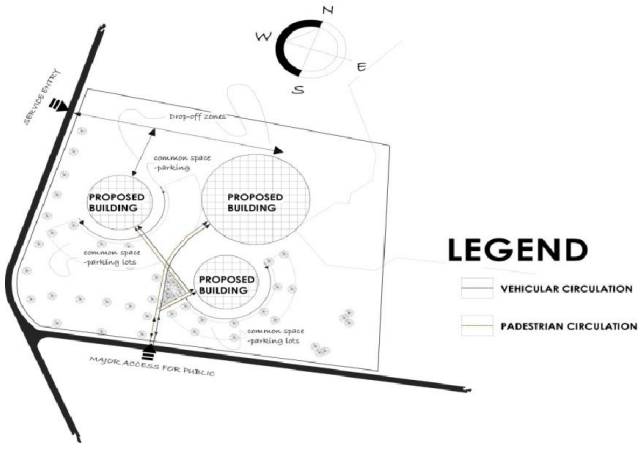


Figure 6.2: Site development concept
Source: Author, 2014

6.3.3.2 Building form concept

The form chosen for the design is derived from the experiential journey of snails coming off-shore at a river bank to feed on the algae that grows on the rock. Thus, the following illustrations:

1. The snail symbolises the users having a need to feed (theatrical and leisure experiences),
2. The rock symbolises the performing arts centre providing theatrical and leisure experience in form of algae to the users
3. The river symbolises the built form granting access to the off-shore rocks (performing arts centre).

See figure 6.3 for building form concept illustration.

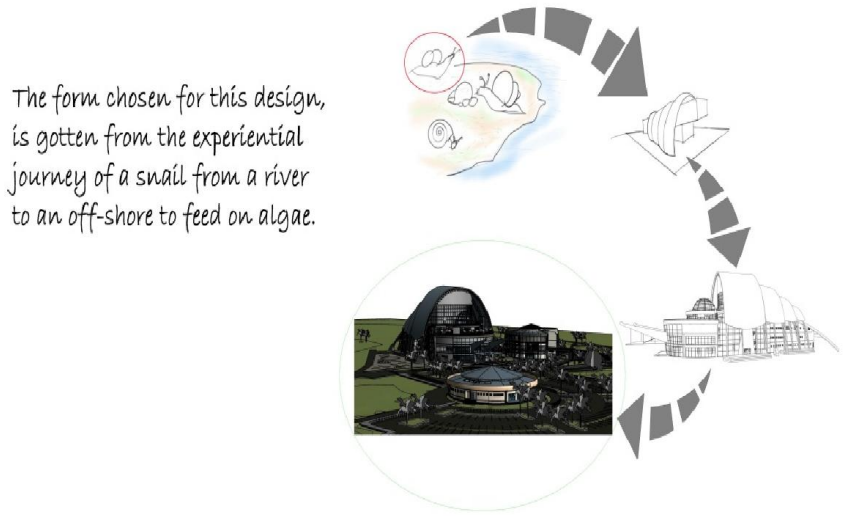


Figure 6.3: Building form concept
Source: Author, 2014

6.3.4 Site Zoning

The proposed site was zoned into three (3) privacy zones. Figure 6.4 shows the zoning of the site into public zone, semi- public zone and private zones.

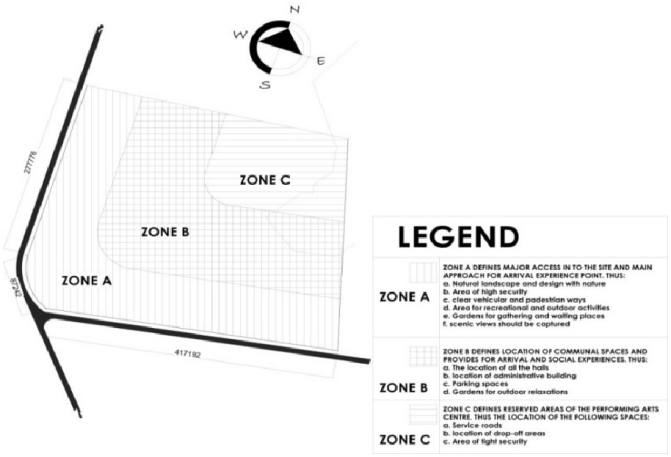


Figure 6.4: Site zoning
Source: Author, 2014

Zone A: This zone defines the major access into the site and approach to the centre and so should provide a befitting experience on arrival and social experience points. Thus, the following considerations are made for this zone.

i. Natural landscape and design with nature
ii. Security check to check users upon entry
iii. Recreational/outdoor facilities
iv. Gardens for social gathering and waiting places
v. Clear vehicular and pedestrian circulation
vi. Scenic views

Zone B: This zone defines location of common spaces. To this end, the zoned space should provide arrival experience points on facades and major social experience points, hence the location of the following spaces:

i. Halls within the centre (main bowl, banquette/multipurpose hall and exhibition halls)
ii. Parking areas
iii. Administrative office

Zone C: This zone defines the reserved area of the performing arts centre and thus, leads to the placement of the following spaces:

i. Service roads (loading and off-loading)
ii. Backstage facilities

6.3.5 Design Considerations

In order to meet up with the requirements for a comfortable and functionally designed building form for a performing art centre, some design issues have to be put into consideration. Thus, the design consideration for the facility is based on functional spaces, inside and outside the buildings. These functional spaces include site plans and car parks, entrance and exit point, horizontal and vertical circulation, supporting facilities, wheelchair users, auditorium and platform/ stage, means of escape amongst others, as they make all make up for the user experience points in the performing art centre.

6.3.5.1 Climate

The climate of the site plays a significant role in the design of the proposed building. In a semi-arid region such as Jos, which is characterized by low humidity and less rainfall, building materials, considerations and construction techniques are such that users can manually control weather effects into some specific spaces like offices and also some bioclimatic principles is been employed to ensure natural circulation of airflow within the building.

In addition, building orientation was with regards to solar radiation and wind, the longer sides of the building was oriented to face the south and the north direction on the east and west axis respectively. Openings on the east and west sides of the building were shaded with trees and horizontal and vertical shading devices.

6.3.5.2 Site plan and car park

Performing art centres are designed to serve large crowds of people and, therefore, must be easy to access from parking lots, drop-off areas, public transit, and pedestrian pathways without disrupting the surrounding flow of pedestrian and vehicular traffic. However, in order to achieve an efficient site plan the following considerations were made.

1. The main entrance to the building is located near the major points of public ingress.
2. Drop-off and pick-up areas are provided for large groups to load and unload from vehicles without impeding the flow of traffic.
3. Parking is located within close proximity to the building and reachable by a clear path of travel.

See figure 6.5 for application of design consideration for site planning of the performing art centre.

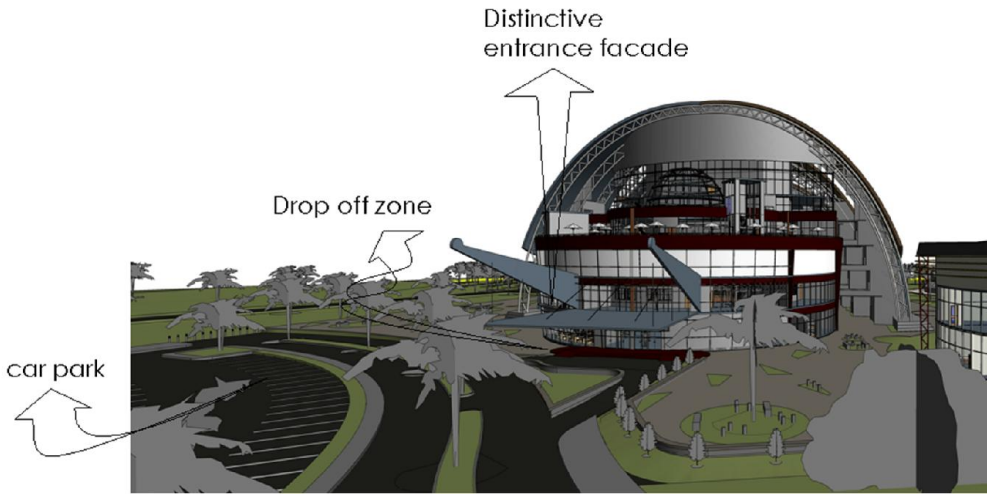


Figure 6. 5: Site planning consideration
Source: Author, 2014

However, a well-designed parking space would make the building more usable to people of various abilities and disabilities and also, make provisions for both

vehicular and moto-cyclist. See figure 6.6 and 6.7 for illustration on site plan and car park considerations.

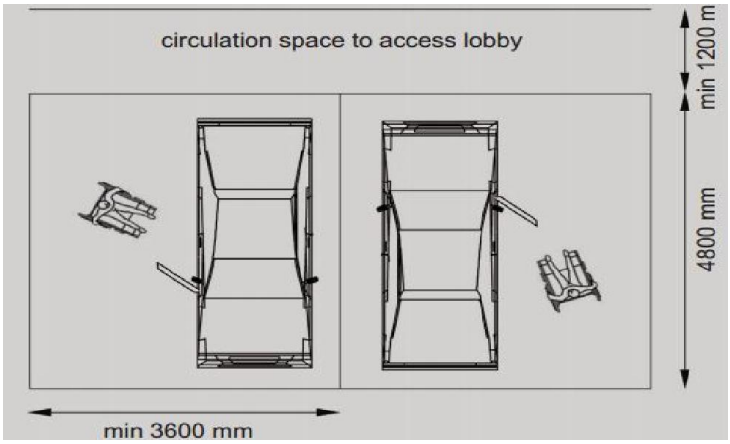
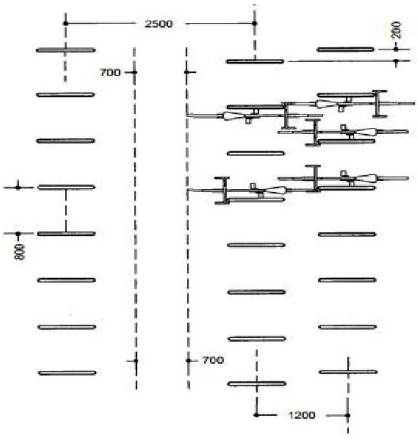
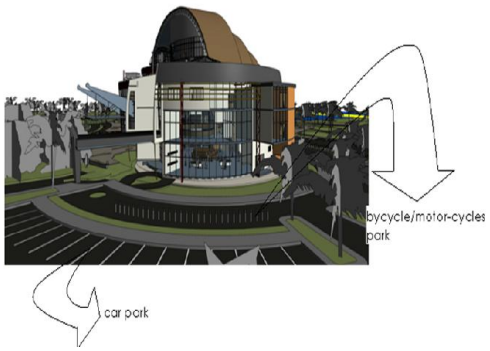


Figure 6.6: Minimum dimension for parking lots
Source: Null and Cherry (1998)



[a]



[b]

Figure 6.7: Parking for bicycles and motor-cycles
Source: Author, 2014

6.3.5.2 Entrance and exit points

The entry to a public building is the point of main introduction. Thus, the entrance and exit points provides a transition space between the public environment or outdoor environment to the inside environment of the facility. As such, the following considerations are made:

1. Use of distinctive exterior design features or landmark near the entrance door so people don't miss their way into the building, see figure 6.5 for the distinctive facade used for the performing arts centre.

2. Drop-off zone, buffer zone and entrance are placed in the same level to allow for easy movement. However, a kerb ramp is used where there is change in level to aid wheelchair users. See figure 6.5 and figure 6.8 for illustrations on the drop-off zones.
3. Entry into buildings begins with lobby as such; tactile indicators or other directional devices are used on lobbies to orientate users to various spaces upon entry the facility. See figure 6.9 for illustration on the use of signage.
4. Reception / information desks are placed at every entrance to serve as a solution to way finding within the facility to all staffs and visitors.

Figure 6.8 and 6.9 illustrates some design considerations for entrances of public buildings.

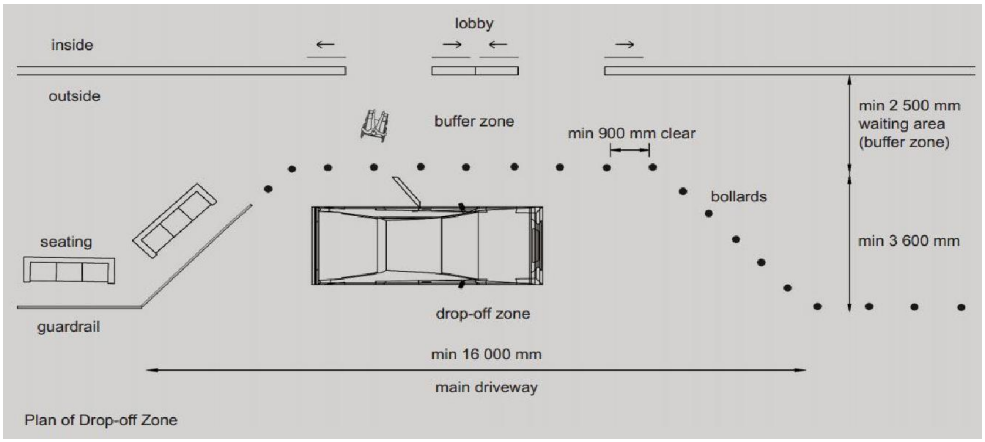


Figure 6.8: Plan of drop-off zone
Source: Null and Cherry (1998)



Figure 6. 9: Use of signage for way finding within the arts centre.
Source: Author, 2014

6.3.5.3 Horizontal and vertical circulation

The accessibility and safety of public circulation in public buildings is critical for ensuring access throughout the building, thus the following considerations are made.

1. For horizontal circulation, it is important to consider safety precautions and the different pace of user movement, as this will determine the physical dimensions and influence the placement of furniture and other objects. It is also important to avoid the protruding of objects along corridors and corridors should be wide enough to allow for both assisted person and wheelchair users to pass.
2. For vertical circulation, besides escalators, lifts and ramps, staircases are one of the most important means of travelling between levels. However, lifts and ramps are introduced to help the disable and health challenged persons to access various levels in the building.

Figure 6.10 and 6.11 illustrate more on the design considerations for circulation spaces.

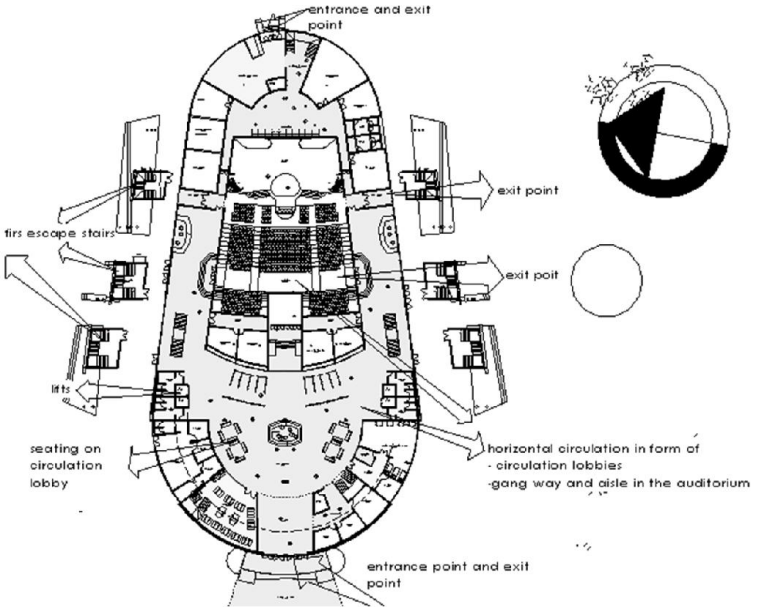


Figure 6. 10: Circulation flow in the performing arts theatre
Source: Author, 2014

6.3.5.4 Auditorium and platforms/ stage

The auditorium serves as the container for the audience focused on the platform/ stage upon which the performances occur. The following design considerations are implemented since the relationship between the auditorium (the audience) and the platform/ stage (the performance) is a fundamental requirement that affects the experience of both audience and performers.

1. Platform/ stage

   The stage design will adopt the open-stage (thrust stage) format and should accommodate the contemporary theatre features which include back stage facilities. Ramps will also be provided to accommodate performers with disability on stage and off-stage. See figure 6.10 for illustration on the adopted stage used for the performing arts centre.

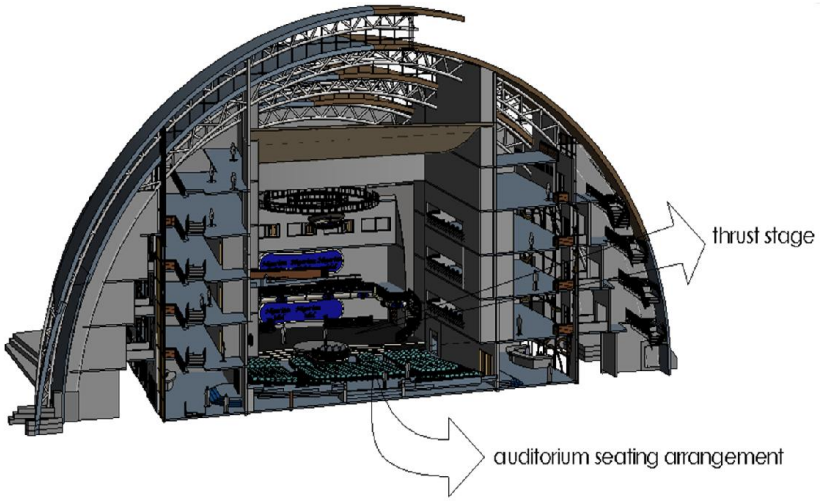


Figure 6. 11: Thrust stage and auditorium seating in the performing arts theatre
Source: Author, 2014

2. Circulation

   While gangway lengths and widths are calculated as part of the fire escape route, they also provide the circulation through the auditorium, with possible

additional gangways from the audience entry points to individual rows and seats.

However, audience entry points into the auditorium from the foyer can be at the rear or sides of the seating or within the banks of seating and should be related to the gang ways since they act as the circulation routes through the auditorium. See figure 6.12 for illustration of the vomitory access into the auditorium.

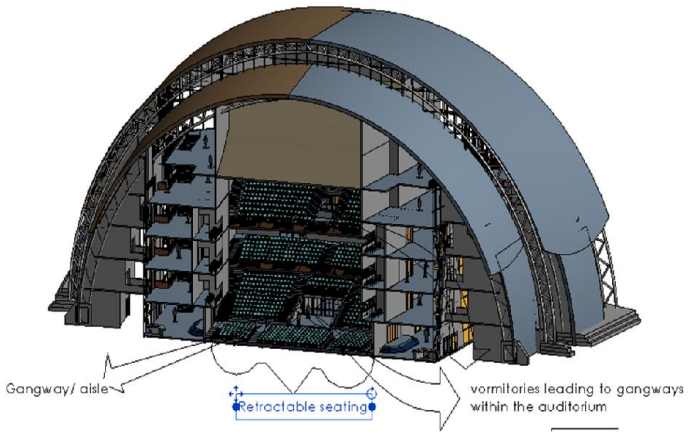


Figure 6. 12: Vomitories for audience circulation
Source: Author, 2014

3. Length of rows

According to Architects' data, a maximum of 16 seats per aisle should be provided for, although 25 seats per aisle is permissible if one side exit door of 1m width is provided per 3-4 rows. See figure 6.13 for more illustration.

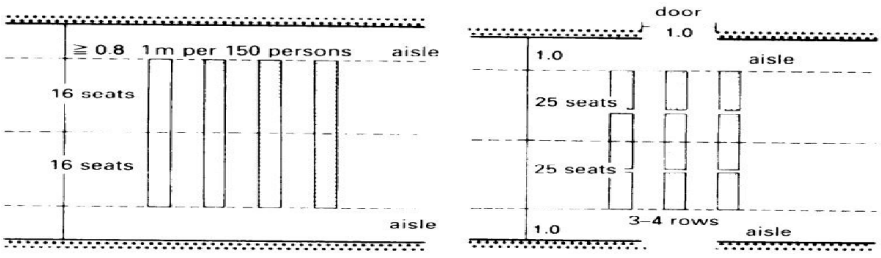


Figure 6.13: Row seating arrangement
Source: Architects' data

4. Seating

The design aim of seating arrangement is to provide an appropriate standard of comfort during a performance. Thus, seating arrangement should also accommodate the persons on wheelchair and also be made comfortable for the elderly. See figure 6.14 for illustration on required seats measurements for comfort in auditoriums.

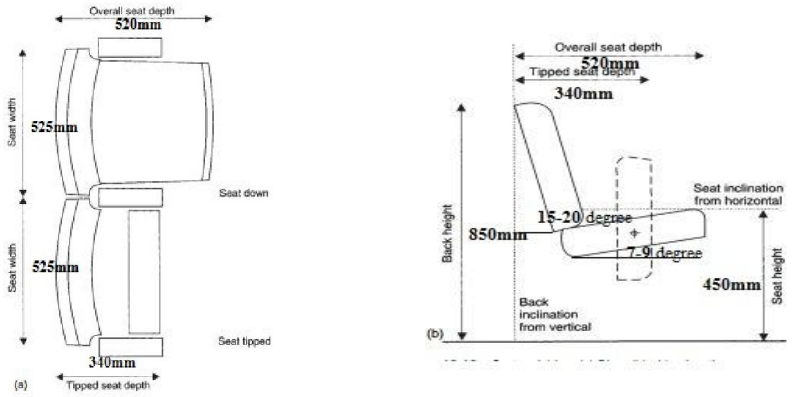


Figure 6.14: Seat measurement
Source: Appleton (2008)

Seating for wheelchair users: Appleton (2008) reveals that seating regulations in auditoriums require a minimum of six places for wheelchair users, or 1/100th of the audience capacity, whichever if the greater. Their location as discrete areas can be at the rear, front, side or within the seating; Wheelchairs can be centrally positioned by forming a bay off a cross-gangway. A wheelchair user should be able to sit with a party of friends not in wheelchairs. Sightlines from the wheelchair should be checked, as should the sightlines of those audience members behind. Some wheelchair users can transfer into auditorium seats. See figure 6.15 for seating arrangements for wheelchair users.

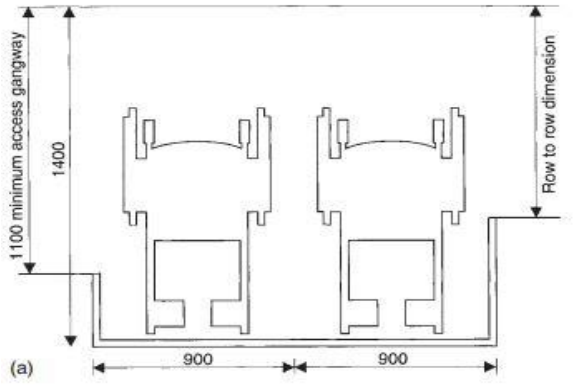


Figure 6.15: Wheelchair seating arrangement
Source: Appleton (2008)

Flexibility: Seats and exhibition panels can be made flexible in order to use the same space for other activities. They can be retractable or foldable. See figure 6.12 for area of the design showing retractable sitting and figure 6.16 for details on a retractable seating arrangement in auditoriums.

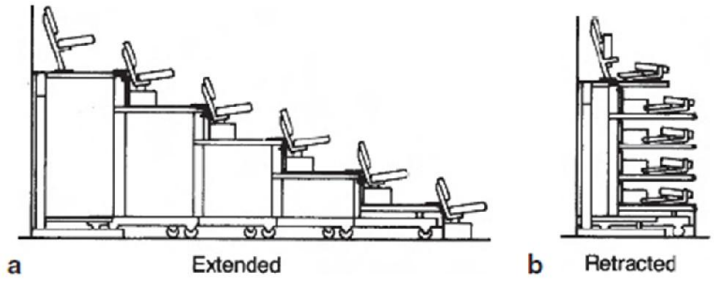


Figure 6.16: Retractable seating
Source: Appleton (2008)

5. Visual considerations:

The proportion of the auditorium as revealed in Architect's data is obtained from the spectator's psychological perception and viewing angle, as well as the requirement for a good view from all seats. For visual comfort, determine the maximum distance from platform or stage at which the audience is able to appreciate the performance and for the performers or speaker to command an

audience. Figure 6.17 – 6.18 are illustrations of visual angles and average distance from audience seating to the stage for aural limitation.

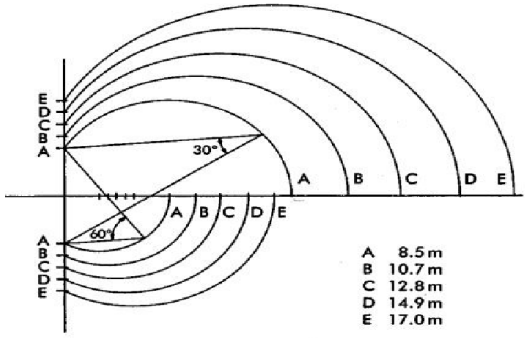


Figure 6.17: Spectators' viewing angle to the stage.
Source: Architect's handbook

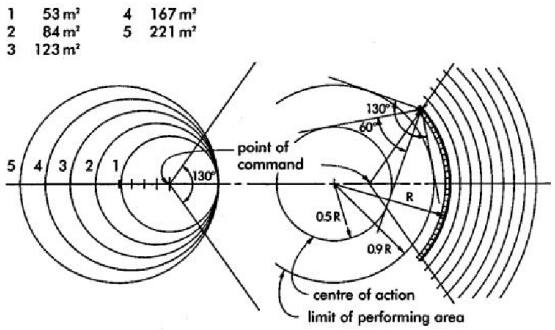


Figure 6.18: Speakers' viewing angle to the seats.
Source: Architect's handbook

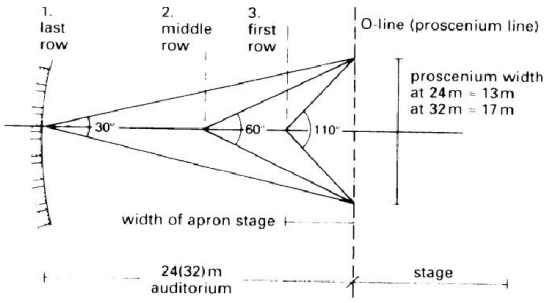


Figure 6.19: Space proportion within a typical traditional auditorium.
Source: Architect's handbook

In addition, effective sight lines on seats and the height of risers for raked floor and balconies need to be considered in order for visual comfort to be achieved by users. See figure 6.20 for illustration on sight lines detail

For height of risers, Architect's handbook reveals a formula for calculating the height of risers.

R= T/D [E + (N-1) + C]

Where N= Number of risers in seat bank

R= Riser

E= Vertical height of eye above the focal plane

C= Head clearance

APS= Arrival Point of Sight

See figure 6.21 for illustrations on height of risers in auditorium..

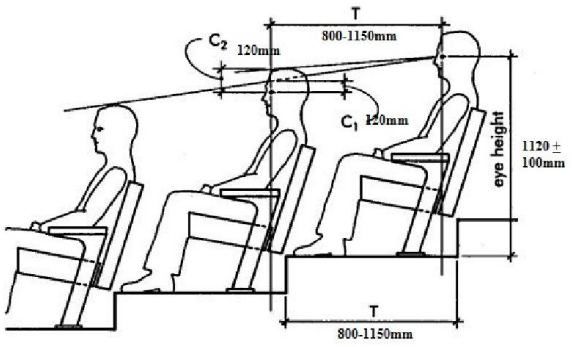


Figure 6.20: Sight lines of typical spectators.
Source: Architect's handbook

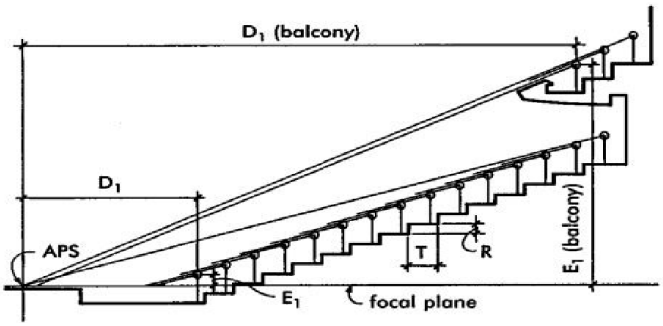


Figure 6.21: Constant height of risers.
Source: Architect's handbook

6. Acoustic considerations

The volume of the room in architect's data is obtained on the basis of acoustic requirements (reverberation). As such, the lines of the ceilings in the

auditorium are obtained from the acoustic requirements. In addition, Architect's handbook notes that high ceilings are required for concerts, musicals and opera, providing longer reverberation time, as such, the typical hall volume should range between 20.5m³-35m³ / audience seat.

The transport of sound through structure should also be controlled through the use of sound lock rooms at entrance points of the auditorium hall. Noise levels should be controlled within zones by appropriate choices of material finishes on floors, walls, ceilings, seats covering, and the shaping of interior spaces to prevent flutter and unwanted amplifying effects.

Finally, according to Architects' data, convex and irregular surfaces aid sound diffusion, domes, vaults, and other large concave surfaces may cause acoustic problems

Figure 6.22 illustrates the ceiling shape within a theatre hall and how sound is been diffused within the hall.

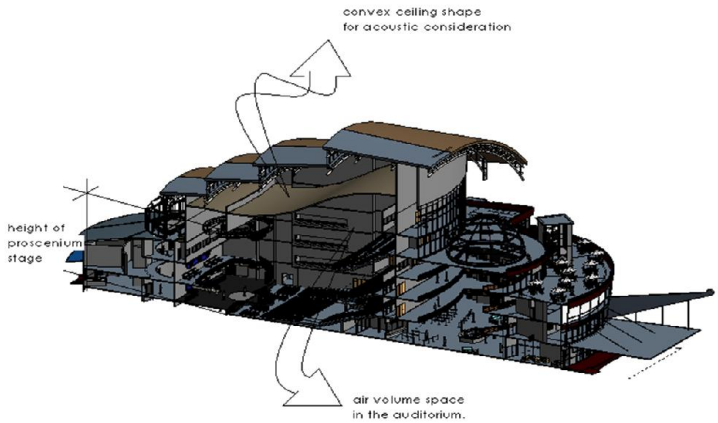


Figure 6. 22: Ceiling shape and sound reflection within the auditorium
Source: Author, 2014

7. Means of escape

The aim of this is for everyone in the auditorium to be able to egress to a place of safety within a set period of time. As such, the escape route is from the seat,

along the gangways and clearways through exits doors immediately or through an enclosed corridor to a place of safety. See figure 6.23 for floor illustration on the exit routes within the performing arts theatre. Table 6.2 shows an elaboration on the evacuation time of audience in an auditorium. However, as measures are put in place in order to egress everyone, the design should provide easy accessibility for fire trucks and also take advantage of the dam by providing fire hydrants that will be serviced with water from the dam.

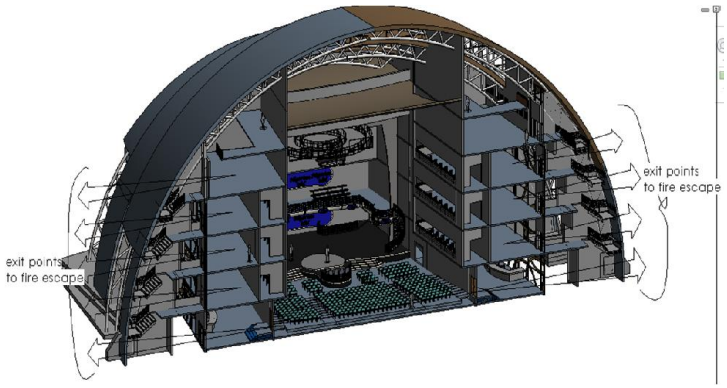


Figure 6. 23: Exit point within the auditorium
Source: Author, 2014

Table 6.2. Evacuation time for audience

Seating arrangement	**Travel distance**	**Time**
Continental seating	15m from any seat	2.5 minutes
Traditional seating	18m from gang way	2.5 minutes

6.3.5.5 Supporting facilities

Supporting facilities should be made available, accessible and usable to users of all kinds, with the disable or temporary disable persons, pregnant mothers, nursing parents, amongst others. The considerations include:

1. Information counters

   Information counters provide users essential information and customer service needed. Therefore, it is important to ensure visibility and accessibility to all

users. See figure 6.24 for illustration on the required height for information counters.

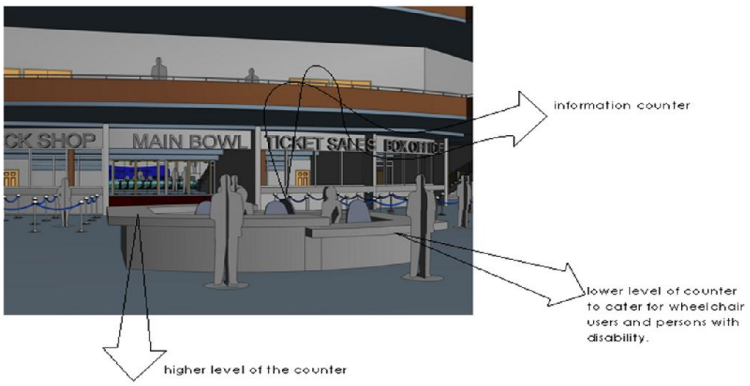


Figure 6. 24: Information desk
Source: Author, 2014

2. Toilets

At every level of the building, toilet utilities are provided with at least one individual washroom for wheelchair users in both male and female toilets. See figure 6.25 for user friendly facilities for wheelchair users.

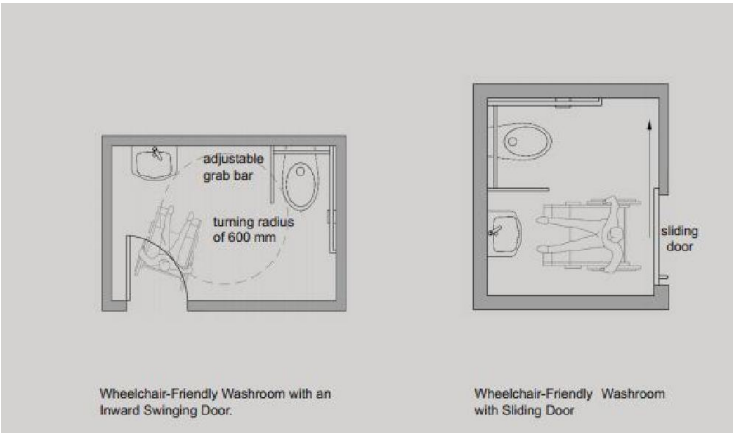


Figure 6.25: Wheelchair friendly wash room
Source: Null and Cherry (1998)

3. Gardens/ playgrounds:

The design of gardens/ playground facilities should accommodate children and adults of all abilities and disability or health challenge. They should be made

available, accessible and usable to everyone. See figure 6.26 for illustrations on garden facilities.

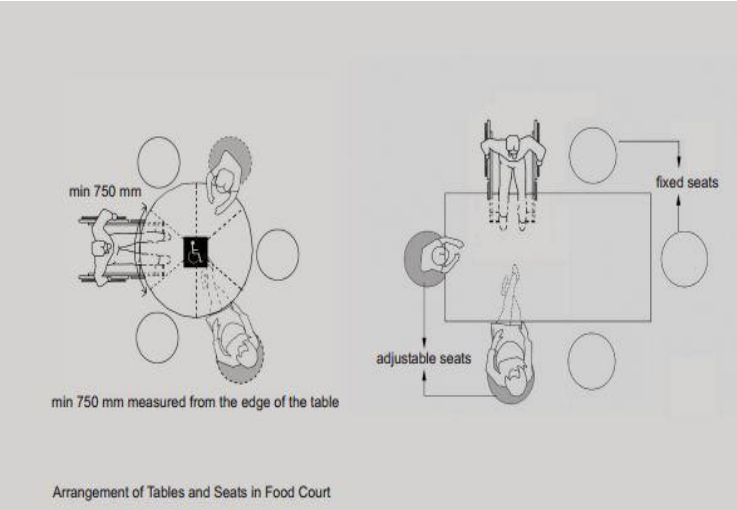


Figure 6.26: Arrangements of tables and sits in food courts.
Source: Null and Cherry (1998)

6.4.7 Site Planning

6.4.7.1 General site layout:

The site layout at ground level includes the following features: the main bowl building, the banquette/multipurpose hall, the administrative and exhibition building, an out-door performing venue/court, a rehearsal court, a Bus Rapid Transit (BRT) drop-offs, clear vehicular and pedestrian way, general parking, service road and buffer zone. See figure 6.27 for site plan of performing arts centre.

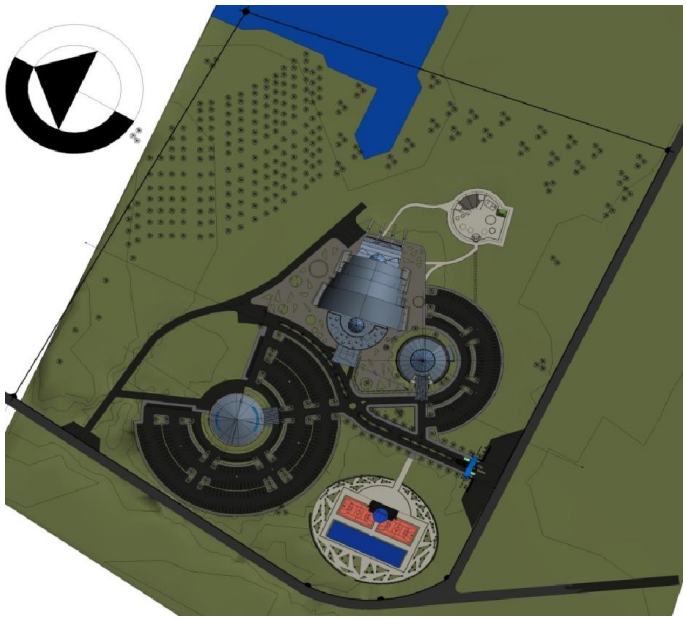


Figure 6.27: Site plan
Source: Author, 2014

The site plan is designed to maximise accessibility, thus the major access is on the southern side of the site, from the existing road with a service road on the western side of the site. The buildings on site are oriented with their longest side along east-west axis to reduce the impact of solar radiation. The parking spaces are designed for easy parking for both vehicle drivers and motor-cyclist. Pedestrian routes are also hard landscape, however with the use of ramps where there was need for change in level in order to facilitate smooth flow for people and persons with disabilities (wheelchair users).

6.4.7.2 Soft landscape:

70 % of the site is undeveloped and is used for soft landscaping.

6.4.7.3 Site drainage:

The drainage channels were designed to follow pedestrian routes and drained through existing drainage channels and the existing dam at the north eastern side of the site.

6.4.7.4 Access for fire service:

Provision was made for access to fire service vehicles in case of emergencies by locating fire hydrants closet BRT drop-off, along drainage channels and at the service road at the back of the halls.

6.4.8 Floor Plans

The performing arts centre consists of the administrative/exhibition hall, the banquette/multipurpose hall and the main performing complex. More so, it has five (5) levels: level1 (ground level); level 2 (1st level); level 3 (2nd level); level 4 (3rd level); and level 5 (4th level).

6.4.8.1 Ground floor plan (level 1):

The ground floor of the arts centre consists of the admin/exhibition hall, banquette/multipurpose hall and the main performing complex.

1. In the admin, the ground floor consists of the temporary exhibition hall, store, security and the curator's office.
2. The ground floor of the banquette/multipurpose hall consists of the hall, stage, kitchen, office and rest room facilities.
3. The main performing complex consist of the security office, retail facilities, restaurants, a crèche/children's area, an auditorium with stage facilities, ticketing area and travel agency.

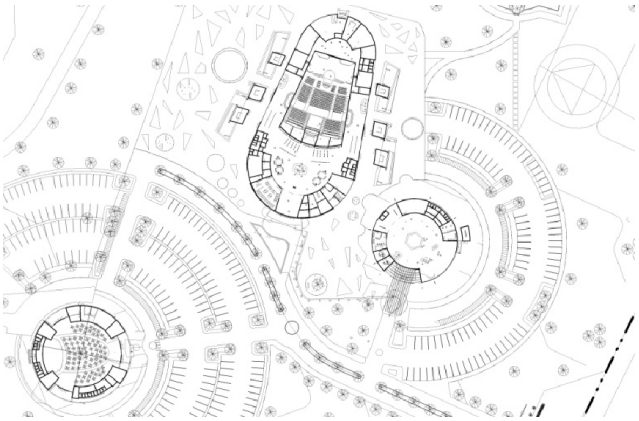


Figure 6.28: Ground floor
Source: Author, 2014

6.4.8.2 First floor plan (level 2):

The first floor of the arts centre consists of the admin/exhibition rooms and the main performing arts complex.

1. The admin building on this floor consists of exhibition rooms and curators offices.

2. The main performing complex consists of the auditorium (balconies), back stage area (offices and changing rooms), restaurant and recording studios.

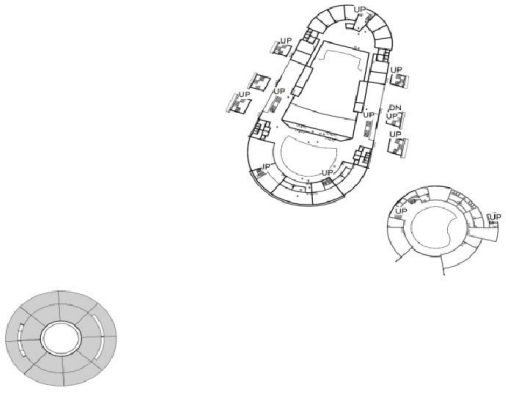


Figure 6.29: 1st floor plan
Source: Author, 2014

6.4.8.3 Second floor plan (level 3):

The 3rd floor of the performing arts centre consists of main performing complex, which has the auditorium that stretches to the 5th floor and the admin/exhibition hall which consists of the managerial office of the entire performing arts centre.

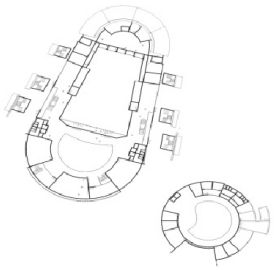


Figure 6.30: 2nd floor
Source: Author, 2104

6.4.9 Elevations

The elevation of the performing arts centre depicts a sculptural form and shows a hierarchy of spaces for various performances. See figure 6.31 for the elevations of the performing arts centre and figure 6.32 for 3 dimensional drawing showing the built form strategies used.

See also in appendix for building sections, cutting across the site showing different for building levels and hierarchy of space.

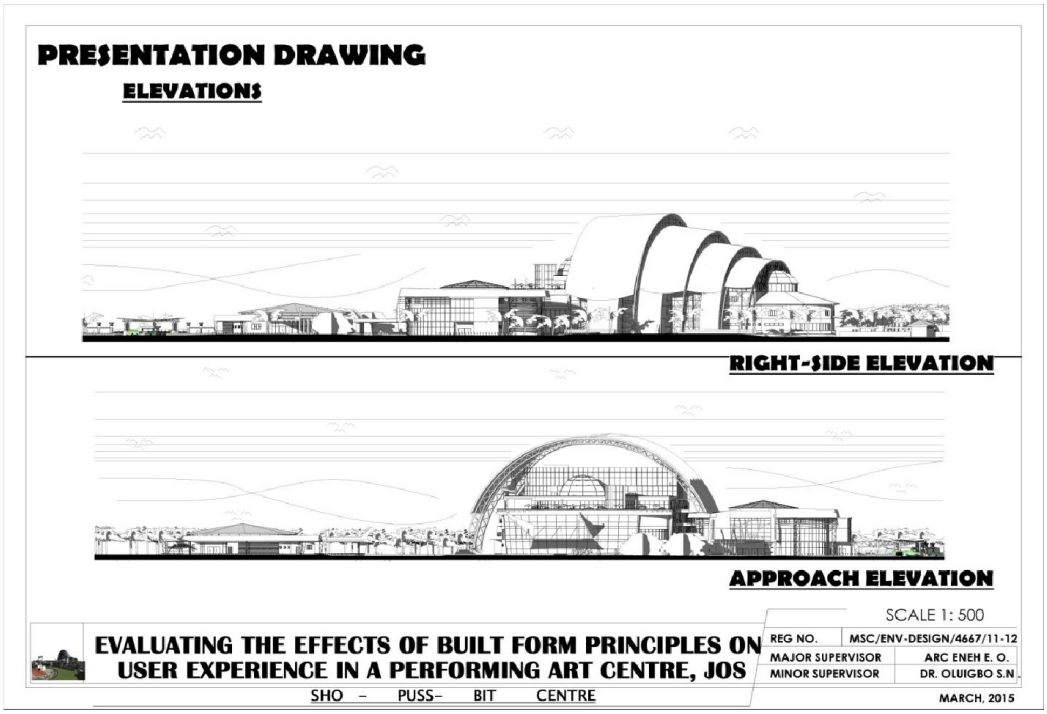


Figure 6.31: Elevations
Source: Author, 2014

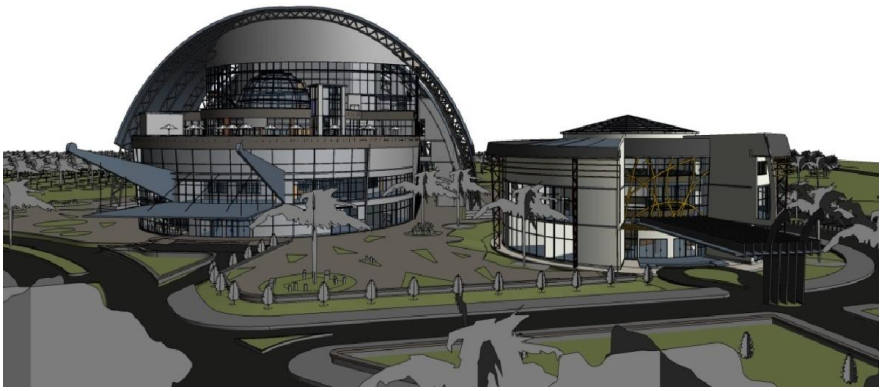


Figure 6.32: 3 dimensional drawings
Source: Author, 2014

6.4.10 Building Materials

The building materials are mostly steel, glass and concrete. Other materials are finishes made of wood, plastic and ceramics. Entrance porch and the reception areas

are made of marble floor finishes. Special stainless steel rounded railings are vertically and horizontally connected by fasteners and so could be dismantled. The doors are double swing at the entrance to enable swift flow of users.

In addition to the above paragraph, it will be important to further discuss the building materials based on structural frame, cladding and partition:

1. Structural frame:

   Reinforced concrete was used for the main structure of the building and includes arches, abutments, anchor bolts as well as pad foundations for the substructure. However, the roof is supported on titanium structural steel girder which is anchored to the abutments.

2. Cladding:

   Large glass panels were used for areas of large glazing at the same time, sandcrete block was also used on exterior walls.

   On the roof, kalzip metallic roofing sheets was used to provide a distinctive metallic outer shell and roof covering.

3. Partition:

   Sandcrete block was used to partition most of the spaces. however, for section of the interior where visual access is important such as storefronts and ticketing areas, glass partition was used. Also medium-density fibreboard (MDF) was used to partition stalls in restrooms and quick changing areas at the back stage areas.

4. Finishes:

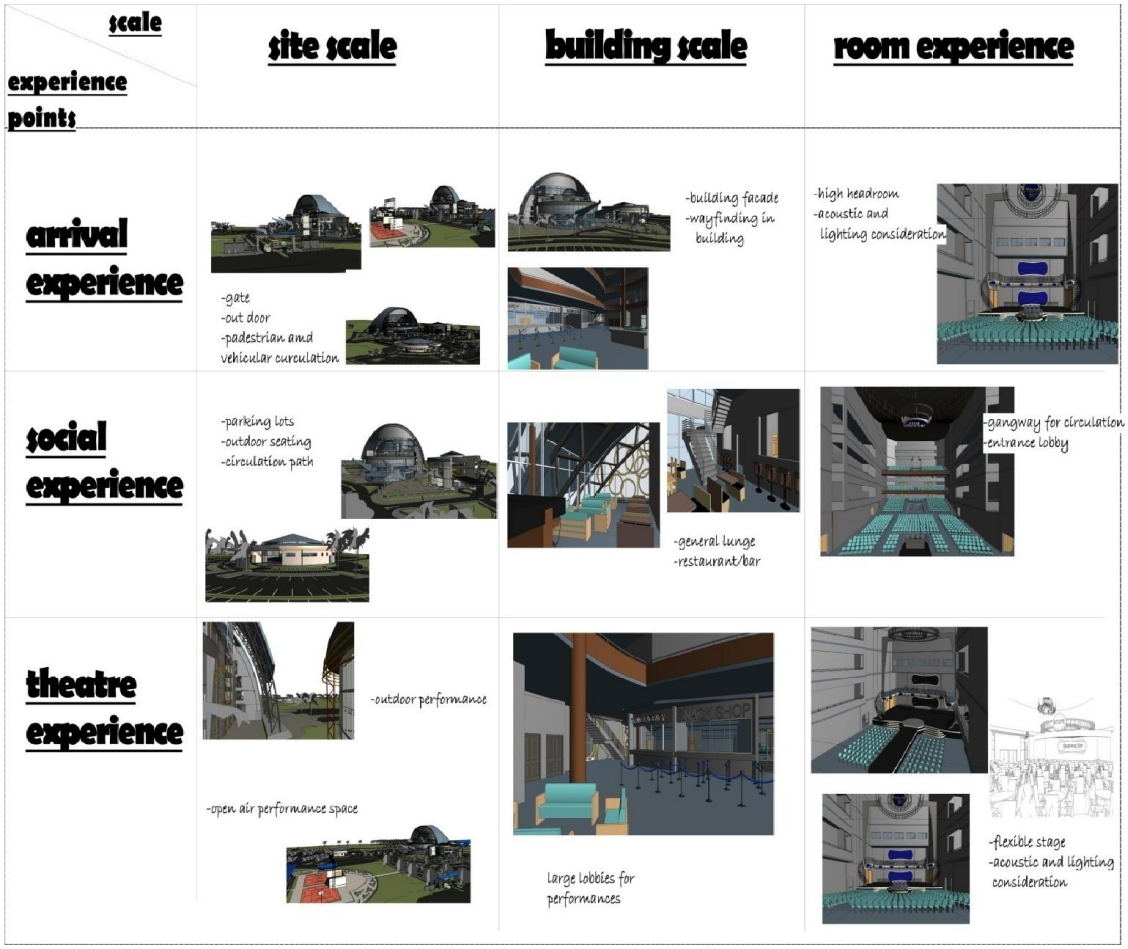
   The consideration given to the selection of finishes were non-slippery surfaces, durability and easy to clean. To this end, terrazzo floor finish was

used for most of the circulation spaces while interior spaces for halls where finished with floor carpets laid over terrazzo floor finish.

For the wall finish, the major consideration was sound absorption as such, rough texture finishes such as tyrolean was used for the columns and abutments. Also, panelled timber strip boards were used in the interior of the halls to aid the acoustics within the hall.

6.5 Application of Framework on Proposed Design

The application of the research on the design is illustrated with the aid of the table below.



CHAPTER SEVEN

7.0 CONCLUSION AND RECOMENDATION

7.1 Summary of Research Findings

Three research questions were posed from the beginning of this research; thus the following presents a summary of the findings under each research question.

7.1.1 Techniques for measuring user experience:

The study found methods that can be used to measure user experience. However, for the purpose of this study, the questionnaire and interview method were used and thus the following result;

1. Findings from questionnaire survey reveal the areas of the built form that affect user experience of audience in performing arts centre which include: location, parking, entrances, theatre seating, and circulation, building form, auditorium and stage design.
2. Findings from interview reveal displeasure on available standards of performing centres.

7.1.2 The extent to which built form principles affect user experience in performing arts centres:

From the study on user experience, three (3) experience points were generated and they include, arrival experience points, social/shared experience points and theatrical/room experiences. These generated user experience points are achieved by the careful placement of the buildings that make up the built form. However, a case study was carried out to three (3) selected cases and with the help of a checklist, the level of concentration on user experience points was checked alongside the character of the building form.

The outcome of the result however reveal the little concentration given to user experience points, but to a great extent a positive result in the use of built form principles in placing the buildings.

7.1.3 Key contemporary developments in the design of performing arts centres:

The study on performing arts centres reveals the conception of new spaces for the arts; from the regular proscenium theatre to a more flexible theatre in performing arts centres. The study further categorises the users of performing arts centres to staffs, performers and audience. Design considerations that will enhance user experience of a performing arts centre were also outlined with the aid of new conceptions of space which include;

I. Site consideration (location of site, parking and supporting buildings)
II. Auditorium and stage design
III. Supporting facilities and
IV. Spaces for children.

In the addition, the interview that was carried out reveal the lack of adequate spaces to cater for the arts and so makes it a hindrance for artiste and performers to compete with their contemporaries.

7.2 Contribution to Knowledge

The major contribution to knowledge produced by this study is the development of a design framework to guide the spatial development and conception of performing arts centres in Nigeria. (See page 116).

However, a proposed performing arts centre in Jos was designed and employed the built form principles considering user experience points to serve as a model for performing arts centre design.

7.3 Conclusions

The goal at the beginning of this research was to evaluate how built form principles affect user experience in a performing arts centre. The study shows that not only does built form principles affect user experience but however, reveals that in design for user experience, the architect or designer ought to note the following;

1. Understand the user (Who they are, what they care about and how they think of the available facilities in front of them).
2. The architect should be able to point out and create experience points that serve as areas where user engagement with facility is strongest.

Thus, the building form when carefully organised, provides the avenue for various user experience points in the arts centre t, thereby providing positive user experience for audience and visitors of the performing arts centre.

7.4 Recommendations

The outcome of this study could have several applications. To this end, the following recommendations are made for further studies.

1. The design framework developed from the study can be used to guide future performing arts centre design, and so could serve as a framework to help inform design decisions during the design process.
2. The use of user generated principles (points) to determine the outcome of this research goes a long way to reveal that design with user experience in mind can be used to resolve issues of;
    I. Patronage of some buildings
    II. Energy efficiency in buildings
    III. Learning and work experiences amongst other experiences that needs to be achieved.

REFERENCES

Anderson M. (2013).The readability and usability of building user guides.

Appleton I. (2008). Building for the Performing Arts: *A design and development guide*.2nd edition. Pb. Elsevier Limited.

Architecton (2014). Tempe centre for the performing arts/ architecton. ArchiDaily.

Ayakoroma B. F. (2012) Theatre practice in Nigeria: to be or not to be? Nolly judge.

Baharin H. and Morrison A. (2006) Eliciting Audience's experience to improve art installation.

Baker W. T. (2008). Architectural excellence.Images publishing.

Roto et al (2011). User experience white paper: bringing clarity to the concept of user experience. *Dagstutil seminar.Demarcating user experience.*

Brown and Ratzkin (2011).Making sense of audience engagement.Volume 1.The San fancisco foundation.

Brown Z. Cole R .J. Robinson J. and Dowlatabudi H. (2010).Evaluating user experience in green buildings in relation to workplace culture and context. Emerald group publishing limited.

Bunting C. Chan T. W, Goldthorpe J, Keaney E and Oskala A. (2008). Form indifference to enthusiasm: Patterns of arts attendance in England. Art council England.

Chartbun C, Wright A, O'RyanEand Johnston K. (2011).Logan central builtform and urban design strategy. AECOM

Ching F. D. K (2007). Architecture: form, space and order. 3rd edition. John Wiley and Sons, inc.

Crawford S. (2009). An architecture of relationships built on the use of parametric modelling and evaluative analysis in design.

CrismanP . (2007). Form: *Whole Building Design Guide (WBDG); Natural institute of building science.*

Darragh J.C. (2012). Experience generated design: An approach to restore balance in a culture of comfort. Unpublished thesis.

Davis A. T and Preiser W. F. E (2012). Architectural criticism in practice: from affective to effective experience.

Doxa M. (2001). Morphologies of co-presence in interior public spaces of performance; the Royal festival hall and Royal national theatre of London.*3rd international symposium Atlanta, 2001.*

Duca G. (2012). Usability requirements for buildings: a case study on primary schools IOS press.

Edmond P. S (2007). Evaluating structural form: is it sculpture, architecture or structure? *ASEE National conference Honolulu, HI, June 24, 2007.*

Eni K. E. (2013). Aesthetic considerations in contemporary Nigerian theatre design technology. *Online international journal of arts and humanities.*

Essays, UK (2012).Scultural forms

Feng S. (2007). *Shape of buildings*: FengShui world. Published 2013 wofs.com Sdn bhd.

Garrett J.J. (2014). The elements of user experience: user-centred design for the web and beyond (2nd edition). *U.S.department of health and human services.*

Golafshani H (2003). Understanding reliability in qualitative research.The qualitative report volume 8.

Groat L. N. and Wang D (2006).Architectural research methods.2nd edition. Wiley

Gube J. (2010). What is user experience design? Overview, tools and resource. *Smashing magazine*

Guillani R.W (2001). Universal design Newyork.A city of New York office of the Mayor publication.

Hancock B (2012). Trent focus for research and development in primary health care. An introduction to qualitative research. Produced by trent focus group, 1998 (updated 2002).

Heewagen J. and Zagreus L (2005). The human factors of sustainable design: Post occupancy evaluation of the Phillip Merill environmental centre. Califonia Digital Library.

Hirai Y, Morita Y and Elokla N. (2007).Evaluation of usability methodologies in the universal design process. *International conference on emergency design (ICED'07).*

Hogue R. J (2011). Technology adoption creating innovative education solutions. *Constrction and qualitative research.*

Map of Nigeria (2015). Retrieved January 11, 2015 from Http://plateaunews.com.ng/?=1217

Kerr J. S (2003). Sydney Opera House: A revised plan for the conservation of the Sydney opera house and its site. James Sample Kerr.3rd edition.

Locton D. (2011) Architecture, urbanism, Design and Behavior: A brief review. Word press.

Lorentz D. (2006). A study of notions of immersive experience in museum based exhibition. Unpublished thesis.

Marczyk G. DeMatteu D and Fistinger D (2005).Essentials of research design and methodogy. John Wiley and sons inc.

McCabe B. (2014). Dance heather Sultz is evergreen artist in Nature. Johns Hopkins University.

McNicholas M. T. (2006). The relevance and transcendence of ornament: a new public high school for south side of Chicago.

Metric Handbook Planning and Design Data. 2nd edition/edited by David Adler (1999). Architectural press 1999.

Munrai U. M. (2012).An application of critical regionalism in the design of civic centre for Kaduna.Unpublished thesis.

Nardo A. J. E (2011). Primary elements.

Neville C. (2007). The complete guide to referencing and avoiding plagiarism. 2nd edition. Open university press education and professional book publishers. McGraw Hill Education Europe.

Nigerian Meteorological Agency (NMA), Plateau state inspectorate, Yakubu Gowon Airport Jos (2000). Climatic data.

Null R. L and Cherry K. F (1998). Universal design: creative solution for Americans with disabilities act compliance. Professional publications inc.

Ogar J. N, Idegwo N. C and Egbogu I. C (2014). Building restoration: Restoration of National Art Theatre, Igunmu, Lagos. The department of Architecture, University of Lagos, Akoka.

Oloafe I. A. (2010*).Research Writing for Academic Growth*.A.B.U. Press Limited Zaria.

Olsberg N. (2014). Architecture and sculpture: a dialogue in Los Angeles

Oluigbo S. N. (2010). *Context and application of case studies in architectural research*.Paper presented to staff and students of the department of architecture. A.B.U Zaria

Oni D. (2004). Stage lighting Design: The Nigerian Perspective Society of Nigerian Theatre Artiste (SONTA).

Oskala A. Keaney E. Chai T. W and Bunting C. (2009). Encourage children today to build audiences for tomorrow: Evidence taken from part survey on how childhood involvement in the arts affects arts engagement in adulthood. Arts council England.

Osuala E. C (2005). Introduction to research methodology. 3rdedition.African-first publisher limited (AFP)

Page R and Parry R. (2012). Evaluating visitors experience in museum foyers. AHRC research networks transforming thresholds.

Pilbrow R. (2006). A lively theatre. Theatre communication group, inc.

Poldma T. (2010). Transforming interior spaces: Enhancing subjective experiences through design research.*Journal of research practice volume 6, issue 2, article M13, 2010.*

Reiss E (2011). Users, experience and beyond.FatDux.

Schnarr L. M (2011). Pendullum performing arts centre. Adaptive reuse design of the historic court square building Springfield, MA.

Sheppard M. (2011). The music of architecture.Unpublished thesis.

South Australian Tourism Commission (SATC) (2007). Annual report of Government of South Australia.

Temizer S. (2003). Reading architectural space through a stage event.

The Architects Handbook, edited by Quantin Pickard (2002). Blackwell science ltd 2002.

The Architects' Data/ Ernst and Peter Neufert. 3rd edition/edited by Bousmaha Bauche and Nicholas Walliman (2000). Blackwell science ltd 2000.

The SERVE centre at the University of North Carolina at Greenboro (2008). Types of research.

Theatrical Management Association (TMA). (2005). Capturing the audience experience: A handbook for the theatre reference.

Tobin press kit (2014). Tobin centre for the performing arts.

Totten C.W. (2009). Game design and architecture.Unpublished thesis.

Tyrer E (2010). A complex modernity: Morphosis' San Francisco Federal Building.

UNESCO (2012).Performing arts (such as traditional music, dance and theatre). *Intangible cultural heritage.*

Wallace V. (2013). Successful visitors experience-getting it right. Association of independent museums (AIM).

Waters M. (2009) Performance sites leading indergraduate work in English studies, volumw 2. Innovate

APPENDICES

Appendix I: Checklist for visual survey

Checklist for Visual survey

The checkmarks is to be used to achieve research objective II: "to determine the extent to which the concept of user experience has been applied in existing performing arts centres" and research objective IV: "to develop a model/framework that will be assist Architects in Nigeria in designs of performing arts centres with enhanced user experience". The parameters listed on the checklist are derived from the variables of study which were gotten form the literature review.

Rating for check list is:4-very strong, 3-strong, 2-weak and 1-absent.

s/no	User experience points			Reflectance	Remarks
1	Displayed features for enhancing experience on point of arrival various entrances				
2	Features for social experience and shared experience				
3	Features for theatrical experience (room experience)				
4	Acoustic experience features and visual experience considerations				
	Built form principles			**Reflectance**	**Remarks**
6	Building configuration	a.	Spatial organisations along axis or circulation paths		
		b.	Hierarchy of functional spaces		
		c.	Datum/building relationship to surrounding spaces		
		d.	rhythm		
		e.	symmetry		
			Transformation/flexibility of spaces		
7	Climate responsive design strategies				
9	Circulation and services				
10	Cultural expression on building				

Appendix II: Interview questions

Interview questions

Interview questions for Nigerian entertainers in Jos. The goal of this interview is to unravel the current issues regarding performance art centres with particular emphasis on performer/user experience on stage and off-stage.

1. How in your own opinion will you describe the theatre practice in Nigeria performing art centres?
2. Do you think the available centres have been able to provide for such change or rather accommodate the changes in theatre art practice.
3. Please can you describe your experience when you go for performances in terms of
    i. Available facilities
    ii. Performers- audience relationship
4. Are there factors or things you like to consider that attracts you to a particular centre for performance?
5. Please can you think of any reason or factor that affects the user/performers experience in performing arts centres in Nigeria?

Appendix III: Questionnaire

DEPARTMENT OF ARCHITECTURE,
FACULTY OF ENVIRONMENTAL DESIGN,
AHMADU BELLO UNIVERSITY, ZARIA

Questionnaire

Dear Sir/Madam, I am a student of Architecture currently carrying out an M.Sc. research thesis on "**Evaluating the effects of built form principles on user experience in a performing art centre, Jos**".

This study will be used solely for academic research purposes as such, be sure of complete confidentiality of any answer that will be given.

Thank you.

SECTION I

DEMOGRAPHIC DETAILS

1. **Gender:** Male ☐ Female ☐

2. **Age:**

☐ Below 20 years ☐ 21 – 30 years ☐ 31 – 40 years ☐ 41 – 50 years

☐ 51 - 60 years ☐above 60 years

3. **Marital status:**☐ Single ☐ Married

4. **Profession:**

☐ Student ☐ Public Servant ☐ Private Service ☐ Own Business

☐ Retired ☐Unemployed ☐ Other

5. **Area of residence:** ☐ Urban ☐ Rural

6. **Over the last 12 months, roughly how many times have you been to see a theatre performance (including concerts, comedies, dance, audition events and so forth)?**

Please tick applies to you.

0	1-3	4-10	11+
[ ]	[ ]	[ ]	[ ]

SECTION 2

USER BEHAVIOR TOWARDS PERFORMING ARTS CENTRE ACTIVITIES

Please read: Performing art theatre activities covers a range of staged events and includes drama, dance, music, concerts, traditional dance, banquettes, street performances, and stand up comedies, amongst others. Thus, since we are now acquainted with the phrase in which performance art theatre covers, please answer respectively the following questions.

6.**Which theatre events are you most likely to attend?**

Please tick all that apply

music	
drama	
banquette	
dance	
Traditional. Dance	
concerts	
comedies	
Street. Performance	

7. Does any of the following serve as a motivation for you coming to performing arts centre?

Please tick all that apply

I find it comfortable	
I go for relaxation and recreation	
It serves as a meeting place for I and my friends	
To enjoy the facilities surrounding the theatre	
For family get together	
Just love the feeling	
The landscaping access to recreational facilities	

Others (please specify here)

9. Is any of the following is likely to stop you from going to performing arts centres?

Please tick accordingly

Location of centre	
Availability of parking spaces	
Nature of the hall/auditorium	
Type of stage/platform	
Supporting facilities	

Others (please specify here)

10. How often do you go to performing arts centres with other people?

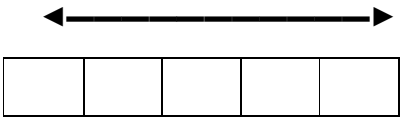
very often	
Often	
Not so often	
Not at all	

SECTION 3

USER ATTITUDE TO PERFORMING ARTS CENTRES

11. Please mark a point on the scale towards whichever is closest to your experience while coming to this performing arts centre?

"It was an awfully bad experience" *"It was a very much awesome experience"*

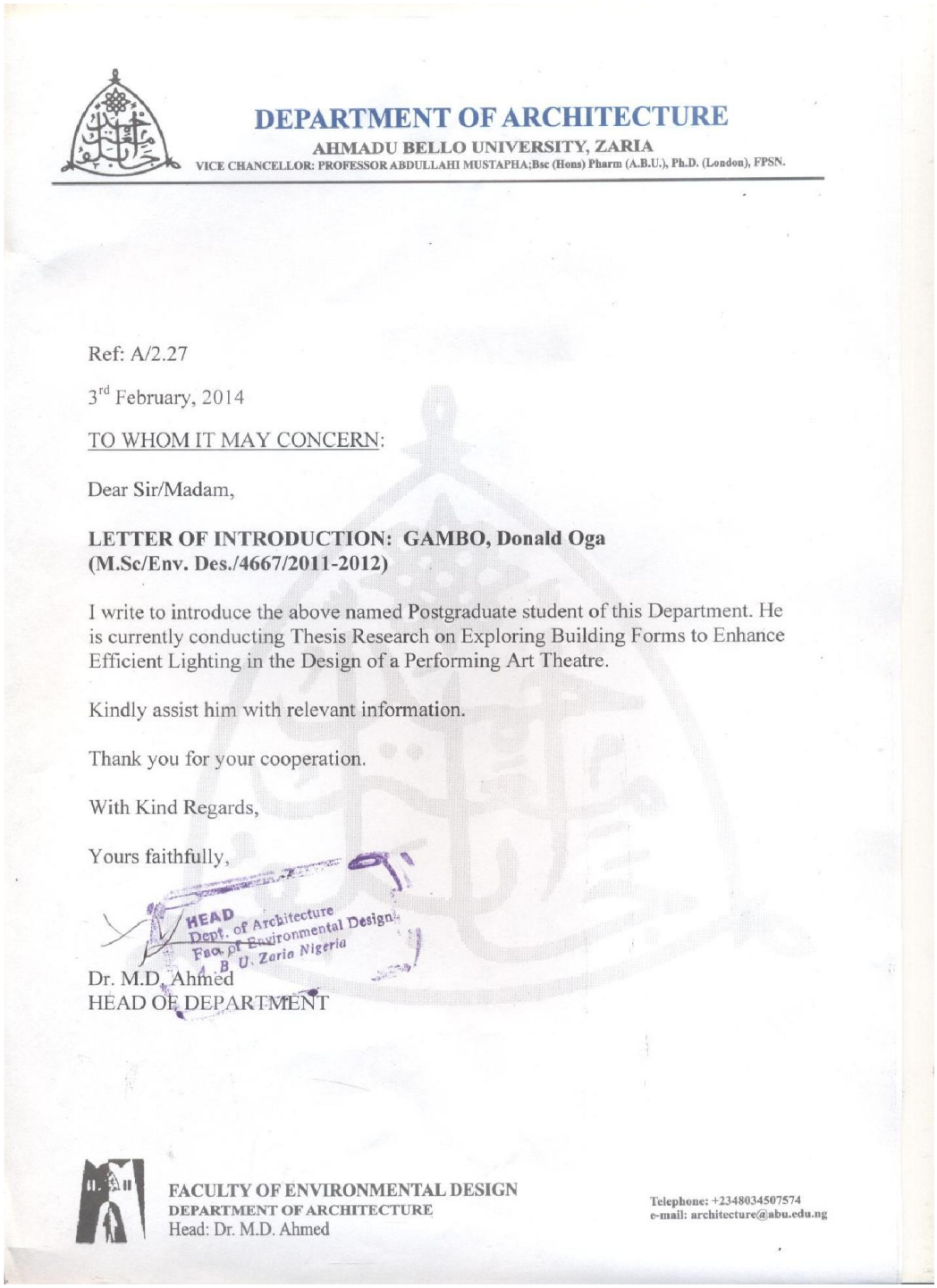


For each of the following please rate how well they impact on your overall experience of a performing art centre

With 1- rating at not at all effective
5- rating at extremely effective

	1	2	3	4	5
12. Location of performing art centre					
13. Parking facilities					
14. Nature of surrounding landscape					
15. Circulation and proximity of spaces					
16. The building form/shape of building within the centre					
17. Location of major building entrances					
18. Nature of hall/auditorium					
19. Seating arrangement in the hall					
20. Type and nature of stage					
21. Restroom facilities					
22. Retail facilities (ATM, Ticketing, Souvenir store, e.t.c)					
22. Ability to locate spaces (rest rooms, retail spaces, entrance doors, e.t.c)					

Appendix IV: Letter of introduction



DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

3rd February, 2014

TO WHOM IT MAY CONCERN:

Dear Sir/Madam,

LETTER OF INTRODUCTION: GAMBO, Donald Oga
(M.Sc/Env. Des./4667/2011-2012)

I write to introduce the above named Postgraduate student of this Department. He is currently conducting Thesis Research on Exploring Building Forms to Enhance Efficient Lighting in the Design of a Performing Art Theatre.

Kindly assist him with relevant information.

Thank you for your cooperation.

With Kind Regards,

Yours faithfully,

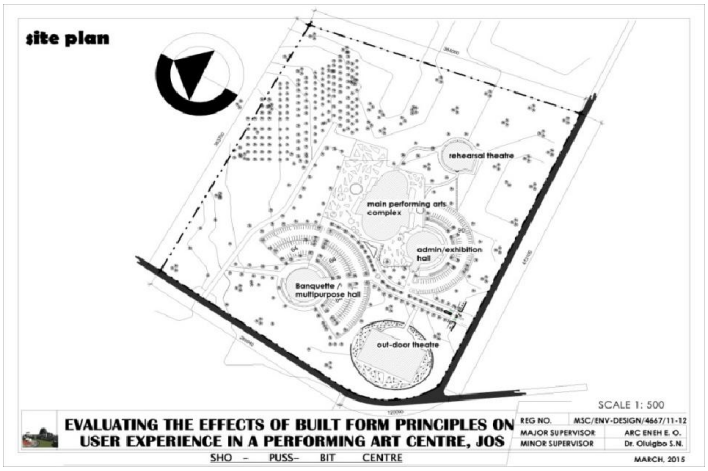
HEAD
Dept. of Architecture
Fac. of Environmental Design
A. B. U. Zaria Nigeria

Dr. M.D. Ahmed
HEAD OF DEPARTMENT

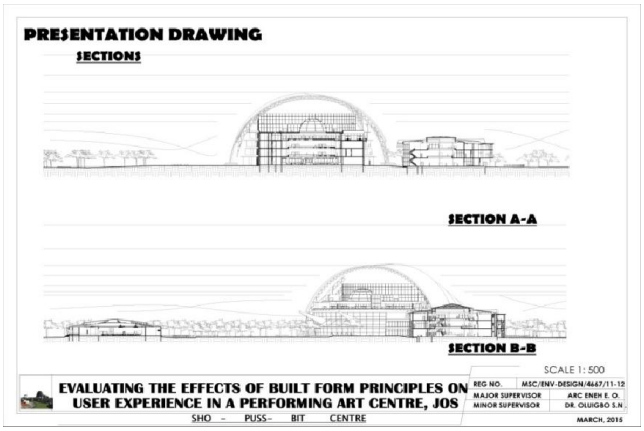
FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

Appendix V: Site plan

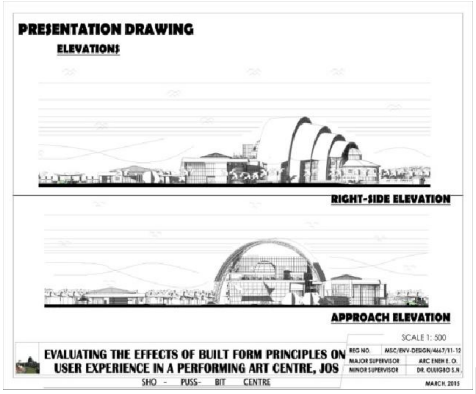


Appendix VI: Site sections

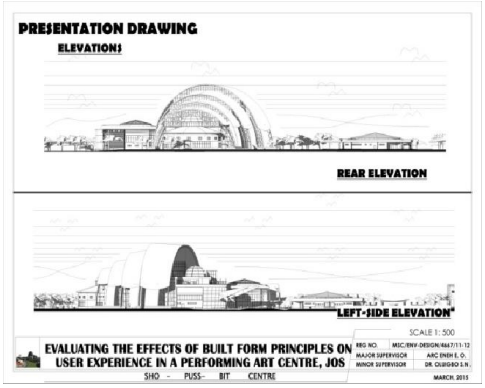


Appendix VII: Site Elevations

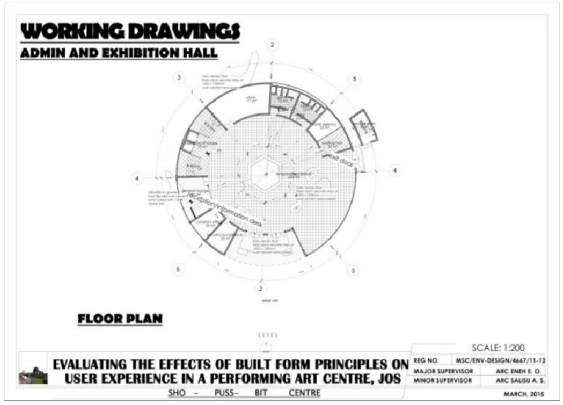
[a]



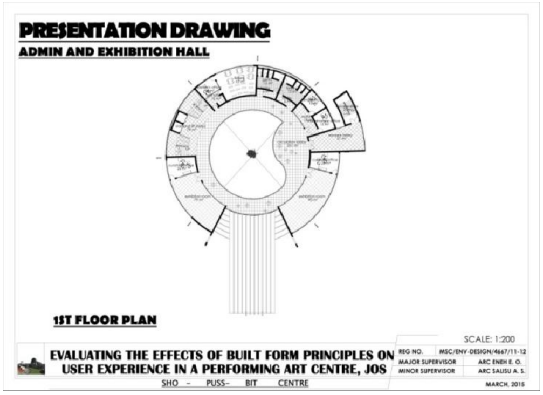
[b]



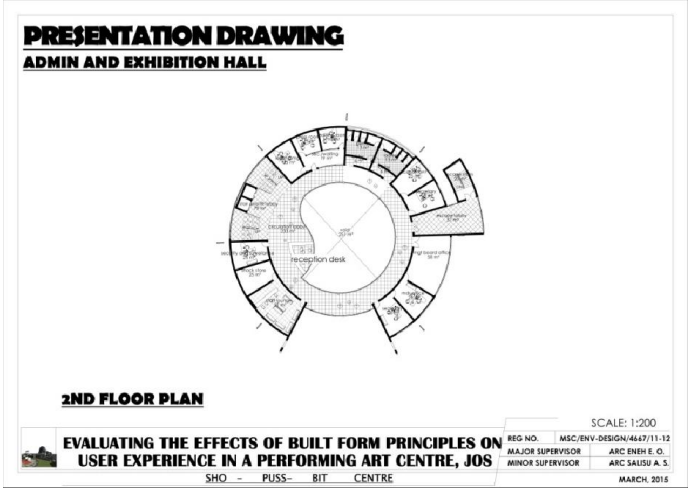
Appendix VIII: Floor plans (Admin/exhibition hall)



[a]: Ground floor

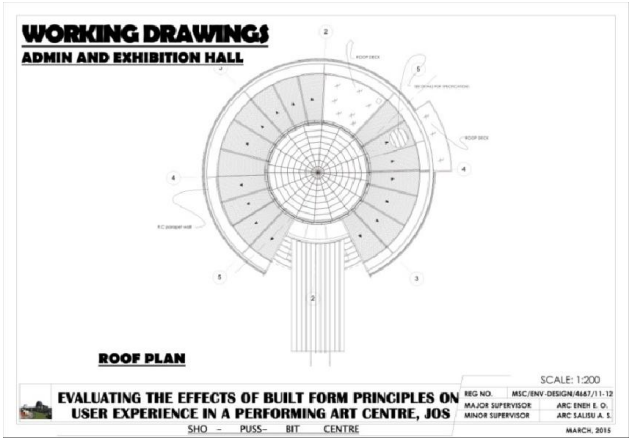


[b]: 1st floor plan

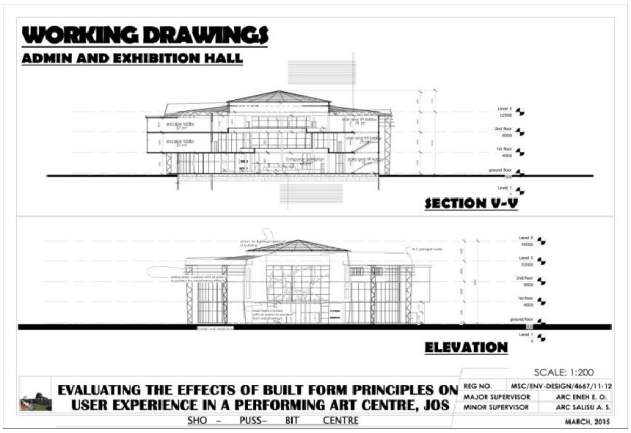


[c]: 2nd floor plan

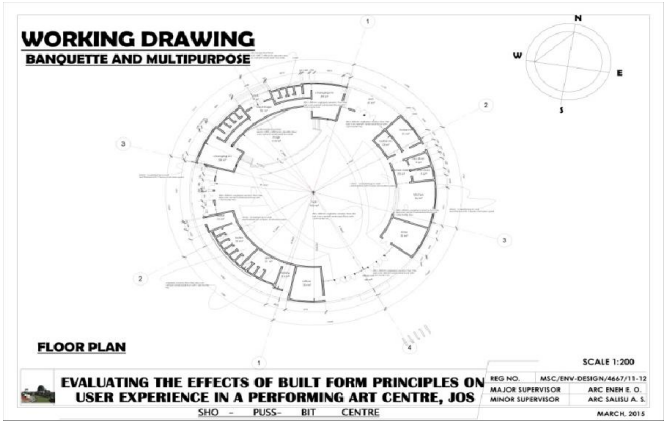
Appendix IX: Roof plan (Admin/exhibition hall)



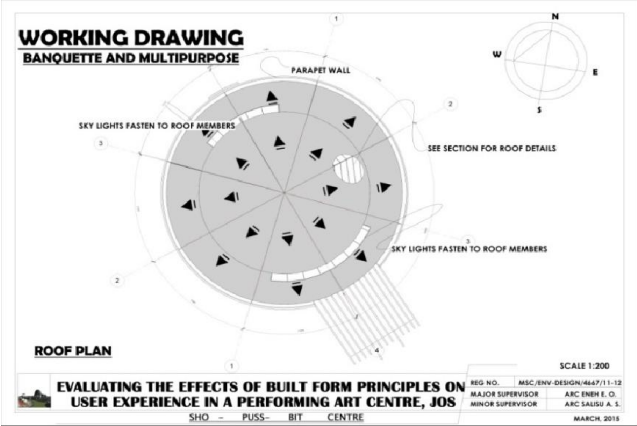
Appendix X: Section and elevation (Admin/exhibition hall)



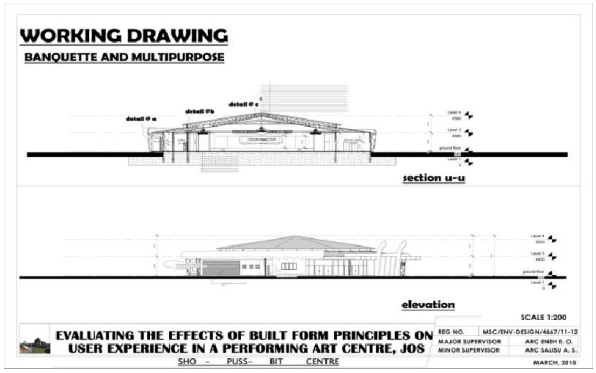
Appendix XI: Floor plan (Banquette/multipurpose hall)



Appendix XII: Roof plan (Banquette /multipurpose hall)

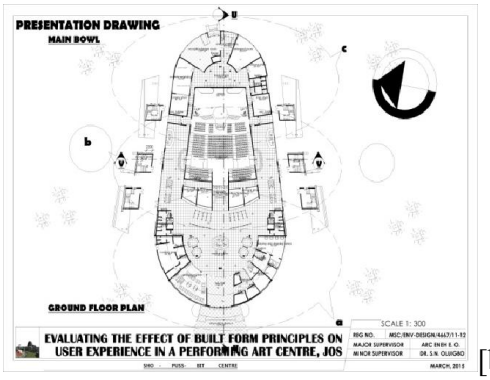


Appendix XIII: Section and elevation (Banquette /multipurpose hall)

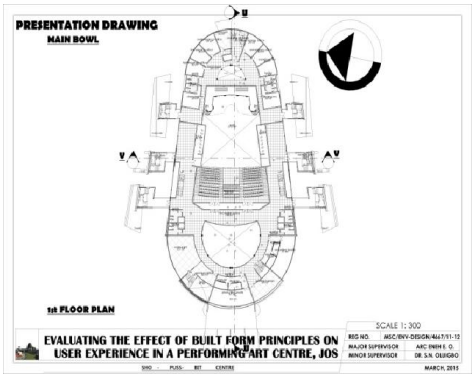


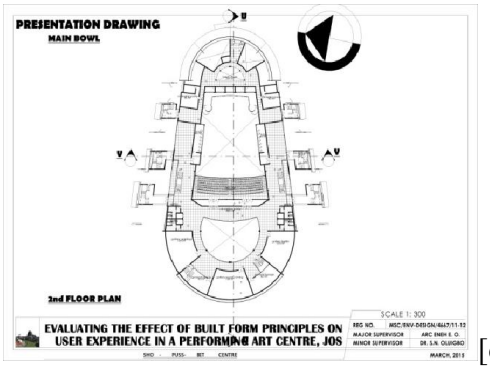
Appendix XIV: Floor plans (Ground floor-fifth floor, Main performing arts complex)

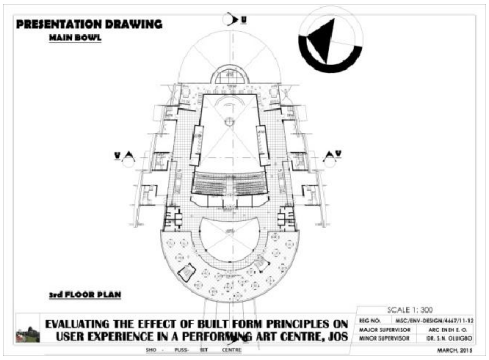
[a]

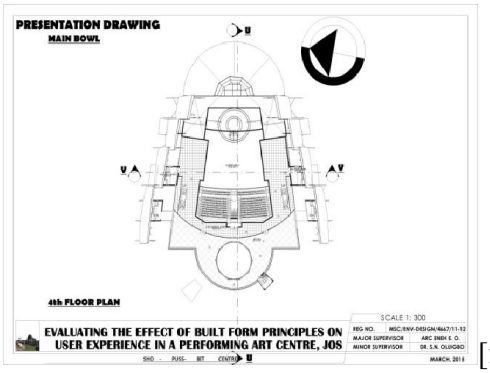


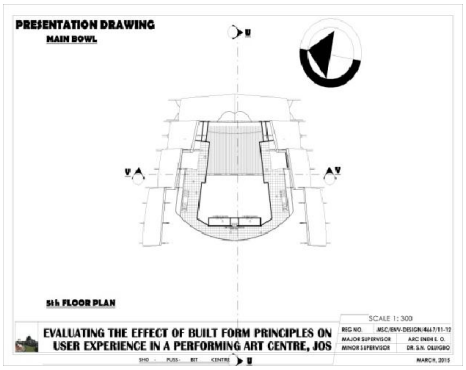
[b]



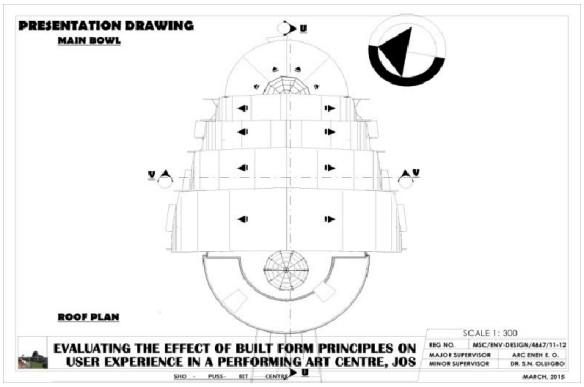
[c] 

[d] 

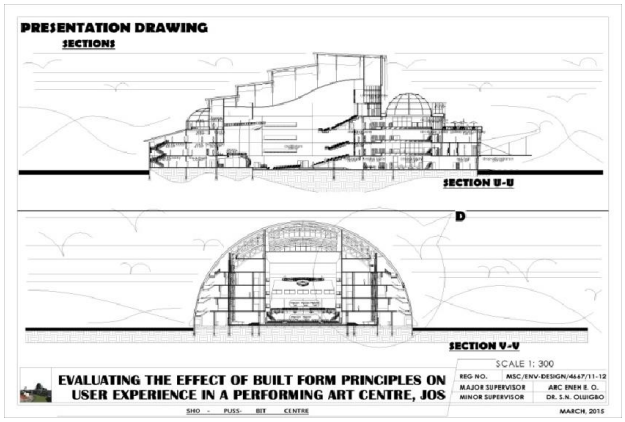
[e] 

[f] 

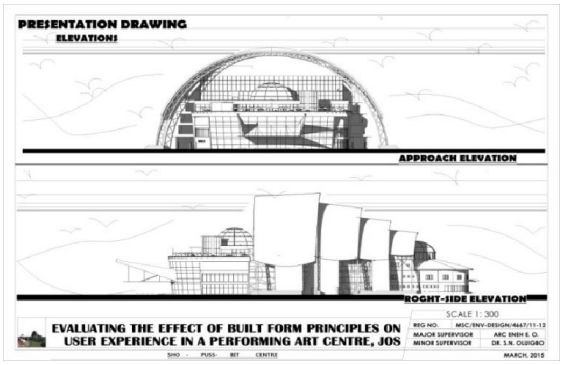
Appendix XV: Roof plan (Main performing arts complex)



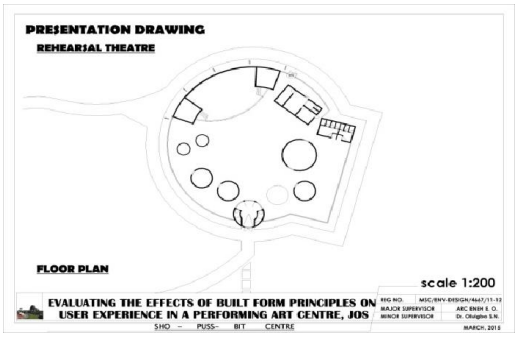
Appendix XVI: Sections (Main performing arts complex)



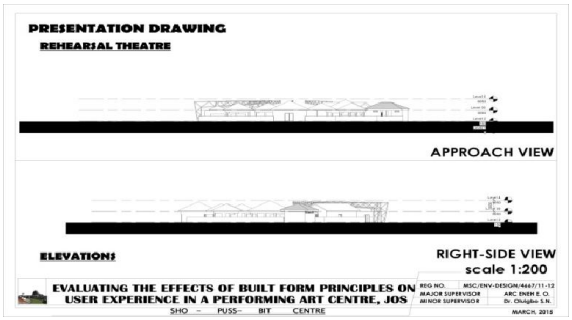
Appendix XVII: Elevations (Main performing arts complex)



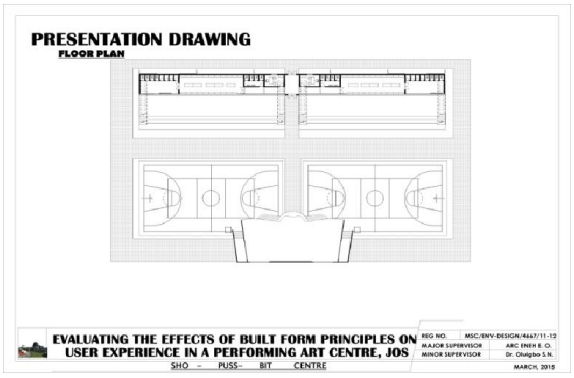
Appendix XVIII: Floor plan (Rehearsal theatre)



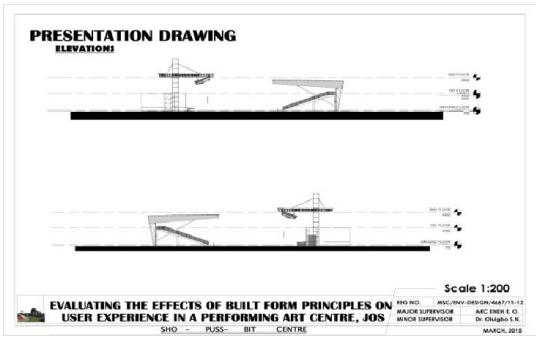
Appendix XIX: Elevation (Rehearsal theatre)



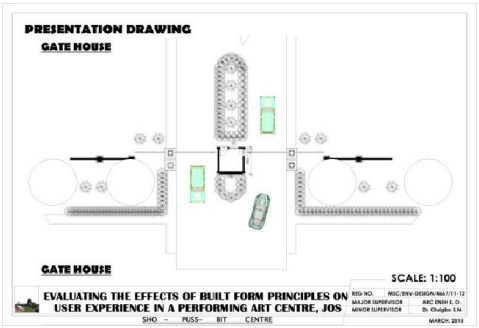
Appendix XX: Floor plan (Outdoor complex)



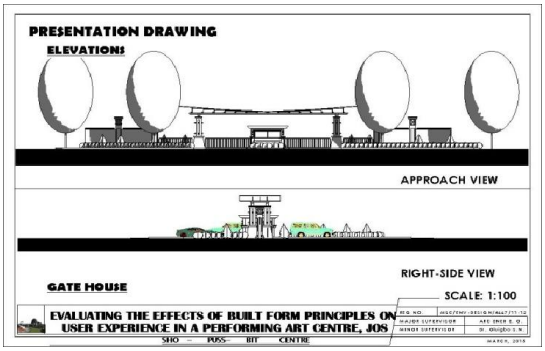
Appendix XXI: Section and elevations (Outdoor complex)



Appendix XXII: Floor plan (Gate house)



Appendix XXIII: Section and elevations (Gate house)

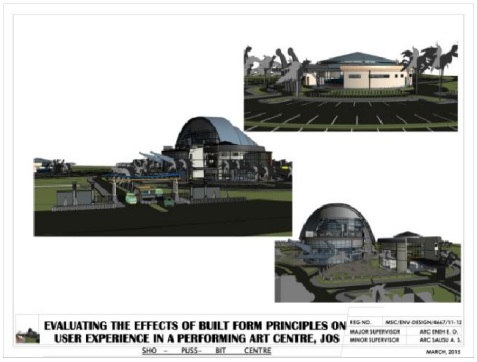


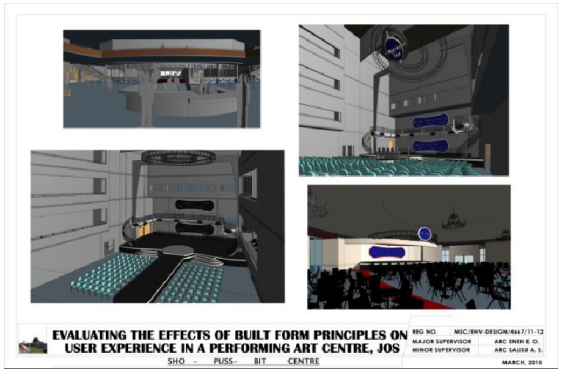
Appendix XXIV: 3 dimensional images of performing arts centre

[a]



[b]



[c] 

Appendix XXV: Final seminar images

[a] 
[b] 

[c] 