

CULTURE INTEGRATION AND SPATIAL MORPHOLOGY IN PUBLIC  
HOUSING TRANSFORMATION IN NORTHERN STATES OF NIGERIA

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A thesis submitted in fulfilment of the  
requirements for the award of the degree of  
Doctor of Philosophy (Architecture)

Faculty of Built Environment  
Universiti Teknologi Malaysia

JULY 2015

*To public housing inhabitants stuck with the burden of culture exclusion in design configurations, and searching earnestly for a cultural concept with the emic and epic paradigm.*

## ACKNOWLEDGEMENTS

After many thanks and gratitude are expressed to Allah the almighty and salutations made to Muhammad (SAW) for this destiny and favours, my deepest gratitude goes to my amiable supervisor Dr Tareef Hayat Khan for his indelible impact in sharing his treasure of experience with me, and his alluring supervision of this PhD thesis. I remain proud to study and train under his guide particularly as one of his first PhD. graduates at least the first in his career at UTM. To my co-supervisor Assoc. Prof. Dr Abdullah Ahmad Sani *Terimah Kasih* (Thank you). I remain grateful to Universiti Teknologi Malaysia, precisely Faculty of Built Environment for providing facilities and enabling environment that supported the accomplishment of this research together with gaining research experience. Next, is my research mentor Dr Muhammad-Oumar A.A who refocused the initial proposal, review the research instrument and guided me through the study. The entire research assistants that participated in the data collection and documentation who are too numerous to be listed, your contribution in pivoting this research through extensive field work is highly commended. The effort of Mohammed Attahiru Aliyu who gave technical support on the Auto-Cad drawings is acknowledged. Your enormous contributions in the compilation of this research work are highly valued and appreciated. Indeed, the emotional inspiration and support received from my parents, brothers, sisters, wife, and children including my mother in-law gave me the impetus at lonely moments and the strength to keep striving until the end. Your patience through the years is accordingly appreciated. The companionship of research group and postgraduate room colleagues as well as research friends gave the needed peer communication that improve and reshaped the research report. Finally, the research values the contribution offered by the management of Federal University of Technology Minna, Nigeria particularly the Department of Architecture in facilitating the TETFUND support.

## ABSTRACT

The phenomenon of transformation in built environment is crucial to sustainable housing growth as it upholds family desires and increases households' performance. Furthermore, the abundance of transformation witnessed in public housing, which is the basic shelter for low income group, is an expression of their housing satisfaction. Yet, stakeholders view transformation as a violation overlooking the benefits therein. Since, investments in public housing schemes by state governments and private developers in Nigeria are growing, therefore, it demands re-thinking of the design concepts. The study aimed to develop a culture responsive design framework for public housing grounded on user initiated transformation experience. The first objective was to identify the core cultural spatial attributes of the housings at the countryside. The second one was to examine their impact on spatial transformation layouts of public housing. The third objective was to derive patterns of transformation in urban housing, followed by the final one which was to synthesize the previous findings in order to establish culture responsive design framework. Ethnographic data collection method was used to achieve the first objective, where spatial layouts of six major ethnic groups were studied. Questionnaire survey and focused observation was used to achieve the second and third objectives. Accordingly, 276 respondents from northern states of Nigeria were surveyed through random sampling. Layouts of 42 of these houses were investigated to find the patterns of transformation of public housing. Employing phenomenological and interpretive paradigms, and by exploiting the researcher's long term engagement as 'privileged' participant observer, the cultural factors behind inhabitants' transformation were identified. In addition, the study provided empirical evidence through statistical analysis that advances the significance of socio-cultural attributes in inspiring users' initiated transformation. The findings suggested existence of cultural link of residents with their roots which possess implicit values. That implies that urban housing require pragmatic response leading to a shift in design and policy by developers and regulatory agencies. This is to embrace a paradigm of public housing development that contributes to the understanding of users' desires and housing needs. Afterward, through qualitative synthesis, several design frameworks for a culturally responsive public housing design were proposed. It can contribute to a healthy urban development of public housing design respecting the users' housing satisfaction.

## ABSTRAK

Fenomena transformasi dalam persekitaran alam bina adalah penting untuk kelestarian pertumbuhan perumahan kerana ia mendukung keinginan keluarga dan meningkatkan prestasi isi rumah. Lagipun, kelimpahan transformasi yang wujud dalam sektor perumahan awam, yang dianggap sebagai tempat berteduh yang asas untuk golongan pendapatan rendah, adalah satu tanda ekspresi kepuasan perumahan mereka. Namun, pemegang kepentingan menganggap transformasi sebagai satu kerugian yang melebihi kelebihannya. Oleh kerana pelaburan dalam perancangan perumahan awam oleh kerajaan negeri pemaju swasta di Nigeria sedang pesat membangun, justeru ia memerlukan pertimbangan semula konsep rekabentuk. Kajian ini bertujuan membangunkan suatu rangka rekabentuk yang responsif kepada budaya perancangan perumahan awam berdasarkan pengalaman transformasi pengguna itu sendiri. Objektif pertama ialah untuk mengenalpasti atribut teras ruang budaya di pinggir bandar. Objektif kedua akan meneliti impaknya ke atas tata atur ruang dalam perancangan perumahan awam tersebut. Objektif ketiga adalah untuk mewujudkan corak transformasi di perumahan bandar, diikuti dengan objektif terakhirnya iaitu untuk mensintesis dapatan sebelum ini mewujudkan rangkabentuk yang bercirikan budaya. Kaedah pengumpulan data etnografik digunakan untuk mencapai objektif pertama dimana tata atur ruang bagi enam kumpulan etnik utama telah dikaji. Soalselidik dan pemerhatian berfokus telah digunakan untuk mencapai objektif kedua dan ketiga. Sebanyak 276 responden dari negeri-negeri utara di Nigeria telah ditinjau melalui persampelan rawak bersyarat. Tata atur 42 buah rumah telah di kaji untuk mengenalpasti corak transformasi rancangan perumahan awam. Dengan menggunakan paradigma fenomenologi dan bertafsiran, penglibatan pengkaji sebagai pemerhati khas yang istimewa, namun faktor-faktor budaya yang berkaitan dengan transformasi penduduk telah dikenalpasti. Tambahan lagi, kajian ini memberi bukti empirikal hasil analisis statistik dan ia telah menunjukkan betapa signifikannya atribut sosio-budaya dalam menggalakkan transformasi yang dimulakan pengguna. Dapatan mencadangkan wujudnya pautan budaya antara penduduk dan akar umbi mereka yang mengandungi nilai-nilai tersirat. Ini menunjukkan bahawa perumahan bandar memerlukan suatu tindakbalas pragmatik kearah anjakan dalam rekabentuk dan dasar oleh pemaju dan agensi kawal-atur. Ia perlu memeluk satu paradigma pembangunan perumahan awam yang menyumbang kepada pemahaman kehendak dan keperluan perumahan pengguna. Kemudiannya, melalui synthesis kualitatif, beberapa kerangka corak perumahan awam yang responsif kepada budaya telah dicadangkan. Ini akan menyumbang kepada pembangunan bandar yang sihat berkaitan dengan corak perumahan awam bersesuaian dengan dengan kepuasan pengguna.

## TABLE OF CONTENTS

<b>CHAPTER</b>	<b>TITLE</b>	<b>PAGE</b>
	<b>DECLARATION</b>	ii
	<b>DEDICATION</b>	iii
	<b>ACKNOWLEDGEMENTS</b>	iv
	<b>ABSTRACT</b>	v
	<b>ABSTRAK</b>	vi
	<b>TABLE OF CONTENTS</b>	vii
	<b>LIST OF TABLES</b>	xiv
	<b>LIST OF FIGURES</b>	xvi
	<b>LIST OF ABBREVIATIONS</b>	xxiii
	<b>LIST OF APPENDICES</b>	xxiv
	<b>GLOSSARY</b>	xxv
<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
	1.1 An Overview of the Study	1
	1.2 Background Study	2
	1.3 Research Problem	8
	1.4 The Research Gap	11
	1.4.1 Environmental Context; Inadequate housing transformation studies with respect to northern part of Nigeria	11
	1.4.2 Existing Gap on Transformation Studies; The need to regulate indiscriminate housing transformation	11

1.4.3	Culture content of Public housing Users in Design; Meta-synthesis of grounded culture attributes as design indices	12
1.4.3.1	Evidence Based Design (EBD) and Public housing Transformation	14
1.4.3.2	Post-occupancy Public housing Neighbourhood assessment	15
1.5	Research Aim	15
1.6	Research Objectives	16
1.7	Research Questions	16
1.8	Research Significance	17
1.9	Research Methodology Outline	20
1.10	Research Scope and Limitation	22
1.10.1	Research Study Domain	22
1.10.2	Environmental Settings; Northern region of Nigeria	23
1.10.3	Language Distribution in Nigeria	27
1.11	Thesis Structure	28
<b>2</b>	<b>PUBLIC HOUSING, CULTURE AND TRANSFORMATION</b>	<b>32</b>
2.1	Introduction	32
2.2	Public Housing Overview	34
2.3	Public Housing in Nigeria	38
2.4	Migration and Housing in Nigeria	45
2.5	Population growth and urban housing	47
2.6	Persistent Dissatisfaction by public housing Residents	48
2.7	Theory of Culture and Space	50
2.8	Spatial Morphology and housing	52
2.9	Adaptation of Culture in Urban Building	54
2.10	Housing Transformation	55
2.11	Why Control Transformation?	56
2.11.1	Sustainable Development and Global Strategy for Shelter	57

2.11.2	Transformation to meet the desire and Cultural needs of Inhabitants	58
2.11.3	The Effect of Building Regulations	59
2.12	Public Housing Transformation	60
2.12.1	Housing Transformation and Sustainable Technologies	62
2.13	Categories of Transformation Patterns	64
2.14	Culture and Housing Theories as Research Underpinning	65
2.14.1	Etic and Emic Theory of Cross-Cultural Research	65
2.14.2	Man-Environment Relation (MER) Design Theory	66
2.14.3	Explanatory Theory of Environment- Behaviour Relation (EBR)	67
2.14.4	User Centred Theory (UCT)	68
2.14.5	Evidence Based Design (EBD)	68
2.15	Summary and conclusion	71
<b>3</b>	<b>METHODOLOGY</b>	<b>74</b>
3.1	Introduction	74
3.2	Philosophy and Paradigm	76
3.2.1	Emancipatory Paradigm	79
3.2.2	Phenomenological Paradigm	79
3.2.3	Interpretive Paradigm	80
3.3	Research Method	82
3.4	Research Tactics	83
3.5	Research Planning and Design	83
3.5.1	Research framework	86
3.6	Research Setting and Population	88
3.7	Sampling Procedure and Sample Size	89
3.8	Validity and Reliability of Research	92
3.8.1	Introduction	92



3.8.2	Trustworthiness in Data, Methods and Analysis	93
3.8.3	Trustworthiness in Findings	94
3.8.4	Qualitative Gap	94
3.9	Developing Research Parameters	95
3.9.1	Operational Framework of Cultural Component	96
	3.9.1.1 Ideological Category	98
	3.9.1.2 Social Category	99
3.9.2	Operational Framework of Architectural Spatial Component	99
3.9.3	Research Variables	102
3.10	Summary	107
<b>4</b>	<b>RESULTS, DISCUSSION AND FINDINGS</b>	<b>109</b>
4.1	Introduction	109
4.2	Data Collection	110
4.3	Data Analysis	111
4.4	Response to Objective one: Ethnography	114
4.4.1	Hausa Ethnic Group	114
4.4.2	Fulani Ethnic Group	117
4.4.3	Kanuri Ethnic Group	120
4.4.4	Nupe Ethnic Group	124
4.4.5	Tiv Ethnic Group	127
4.4.6	Gwari Ethnic Group	129
4.4.7	Ethnography Data Collection	133
4.4.8	Ethnographic Analysis	134
4.4.9	Qualitative Factor Analysis (QFA)	135
	4.4.9.1 Accessibility	141
	4.4.9.2 Guest Reception	143
	4.4.9.3 Outdoor Relaxation	144
	4.4.9.4 Household Organisation and Distribution	146

4.4.9.5	Social Gathering and Domestic routine Activities	147
4.4.9.6	Cooking and Pantry	150
4.4.10	Dwelling Layout Patterns	152
4.5	Response to Objective two: Questionnaire Survey	156
4.5.1	Research Instrument and Measurement	156
4.5.2	Instrument's Reliability	157
4.5.3	Housing Survey; Data Collection	158
4.5.4	Quantitative Analysis	160
4.5.5	Univariate Analysis of Demographic Data	160
4.5.5.1	Family Structure	161
4.5.5.2	Residency Duration	162
4.5.5.3	Age of Household Head	162
4.5.5.4	Frequency in Transformation Occurrence	163
4.5.5.5	Occupants Residency Cycle	165
4.5.5.6	Occupancy Cycle in relation to the Types of Changes made	166
4.5.6	Psychometric Analysis	168
4.5.7	Exploratory Factor Analysis (EFA)	169
4.5.7.1	EFA of Socio-Cultural Factors	169
4.5.7.2	EFA of Socio-Economic Factors	172
4.5.7.3	EFA of Socio-Physical Environmental Factors	173
4.5.8	CFA and Second Order SEM for the Hypothesised Composites	175
4.5.8.1	CFA of Socio-Cultural Factors	177
4.5.8.2	CFA and SEM of Tangible Socio- Cultural Factors	179
4.5.8.3	CFA and SEM of Intangible Socio- Cultural Factors	181
4.5.8.4	CFA and SEM of Socio-Economic Factors	183

4.5.8.5	CFA and SEM of Socio-Physical Factors	184
4.6	Response to Objective three: Participant Observation	193
4.6.1	Transformed Configurations	193
4.6.2	Transformed Layout Analysis	194
4.6.3	Search for transformation types.	195
4.6.4	Effect of Control Levels	198
4.6.5	Transformation Patterns	200
	4.6.5.1 Conversion of spaces for other function	201
	4.6.5.2 Extension of Spaces	205
	4.6.5.3 Addition of Spaces	209
	4.6.5.4 Re-configuration of Spaces	221
4.7	Search for the explicit outcomes	228
4.7.1	Ethnography	229
4.7.2	Psychometric and Transformed Layout Analysis	231
4.7.3	Relating findings from objective one and three	232
4.8	Summary of explicit findings	234
4.9	Establishing the implicit findings	235
4.9.1	Recapping the research stance	235
4.9.2	Findings and Implications	236
4.10	Searching for the implicit meaning	242
4.10.1	Cultural Determinants of Design Framework	242
4.10.2	Spatial Pattern of Design Framework	243
4.11	Establishing the Domains	244
4.11.1	Functionality Character	247
4.11.2	Ordering of Spaces	253
4.11.3	Territorial Control	256
4.11.4	Transformation Practice	258
4.11.5	Social System	260
4.11.6	Spatial Patterns	262
4.11.7	Space Formation	265

4.12	Re-adaptation of cultural attribute in Public housing design	272
4.12.1	Culture Responsive Design	272
4.12.2	Emerging Urban Architectural Character	273
<b>5</b>	<b>CONCLUSION</b>	<b>274</b>
5.1	Introduction	274
5.2	Summary of research outcome	274
5.2.1	Inhabitants' adaptation in the transformed pattern replicating the root	275
5.2.2	Indigenous participation in sustainable public housing planning	275
5.3	Applications	276
5.4	Suggestions for Policy and Design Implications	277
5.5	Contribution of research	278
5.6	Suggestion for Further Research	278
5.7	Conclusion	279
	<b>REFERENCES</b>	<b>281</b>
	Appendices A-H	301-339

## LIST OF TABLES

<b>TABLE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
1.1	Previous Studies on Transformation Phenomenon	6
1.2	Control level, elements and actors in the system man-built environment	23
1.3	Control Levels in the Built Environment	23
1.4	Distribution of Nigeria Major ethnic groups	26
2.1	Housing Development Strategy by Federal Government of Nigeria 1970-1999	44
3.1	Paradigms; System of Inquiry	81
3.2	Methodological Research Framework Chart	87
3.3	Settlements selected for Ethnography	88
3.4	Suggested Sample size thresholds for qualitative studies	91
3.5	Categorizations of Culture Variables	99
3.6	Operationalized of Tangible Socio-cultural Observed variables	104
3.7	Operationalized of Intangible Socio-cultural observed variables	105
3.8	Operationalized of Socio-physical observed variables	106
3.9	Operationalized Socio-economic observed variables	107
4.1	Summary of Data Analysis	113
4.2	Emergent Activities coded from field notes and Photographs	136
4.3	Developing Categories from the Identified Themes	137
4.4	Domain Analysis Matrix	139
4.5	Taxonomic Matrix of Activity and Activity Spaces	140
4.6	Activities with similar functional Space use across the Ethnic groups	141
4.7	Legend decoding abbreviations used in the gamma diagrams	153
4.8	List of Selected Public housings for the Study	159

4.9	Summary of EFA for Socio-cultural Attributes	171
4.10	Summary of EFA for Socio-economic Attributes	173
4.11	Summary of EFA for Socio-physical Attributes	175
4.12	Goodness of Fit statistics used in Model determination	177
4.13	Summary of Goodness of Fit statistics for the Models	188
4.14	Standardized loading Estimate and t-value for Socio-cultural composite	189
4.15	Standardized loading Estimate and t-value for Socio-economic composite	189
4.16	Standardized loading Estimate and t-value for Socio-physical composite	189
4.17	Categorization of Occupants and Transformation types	198
4.18	Evolving themes from ethnography deductions	238
4.19	Evolving themes from Psychometric deductions in Public housing survey	239
4.20	Evolving themes from Transformation layout studies	240
4.21	Evolving Implicit Ethno-Domains	245
4.22	Evolving Implicit Psycho-Domains	246

## LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
1.1	Map of Nigeria showing the three major regions of Nigeria	25
1.2	Map of Nigeria showing the states distribution	25
1.3	Map of Nigeria showing the major ethnic distribution	26
1.4	The flow of research process and thesis chapter	31
2.1	Public housing in United kingdom	35
2.2	Public Housing in Singapore	35
2.3	Public Housing in the United States of America	35
2.4	Public Housing in Australia	36
2.5	Public Housing in Malaysia	36
2.6	Bungalow Public Housing in Nigeria	40
2.7	High rise Public housing with sets of flats in blocks, Nigeria	40
2.8	Ariel view of high rise Public housing with blocks of flat, Nigeria	40
2.9	Typical Duplex, Bungalow and Terrace Public Housing in Nigeria	41
2.10	Typical Bungalow Public Housing Katsina, Nigeria	41
2.11	A bungalow Public housing Unit undergoing first stage of transformation (Securing the boundary) in Nigeria	41
2.12	Public housing units under construction in Nigeria	42
2.13	Typical Duplex Public housing; Completed and under construction	42
2.14	Culture and Space integration	54
2.15	Hydra foam Technology Pilot housing scheme Kuje, Abuja	63
2.16	Culture and Housing theories as nucleus of theoretical framework	70

2.17	Theoretical framework of research	73
2.18	Theoretical research domain	73
3.1	Epistemological research picture	75
3.2	People's cognition with converging point	78
3.3	Clusters of systems of inquiry showing the location of this study	78
3.4	Rapoport's dismantling of "culture" to relate its expression to the built environment.	97
3.5	Habraken's decision levels	101
4.1	Typical Hausa traditional compound	116
4.2	Zaure viewed from inside and outside of the compound	117
4.3	Fore courtyard showing male adult children's room screened with small fence and poultry house at an angle of the courtyard	117
4.4	Nomad Fulani compound showing the path way to the compound and outdoor functional area respectively	118
4.5	Nomad Fulani compound courtyard showing crop drying and kitchen shed respectively	118
4.6	Nomad Fulani compound showing harvest store and tree shed in the courtyard respectively	118
4.7	Layout of a Fulani Compound in Girei-Adamawa, Nigeria.	119
4.8	Outdoor functional area I	120
4.9	Kanuri compound layout at Auno village, Borno, Nigeria	122
4.10	Outdoor functional area II	123
4.11	Building materials of Zana and Mud wall use for construction in Borno	123
4.12	Nupe compound layout in Doko, Nigeria	125
4.13	Path leading to women section in Nupe compound and traditional raffia matting used to screen entrance into the room	126
4.14	Huts located within a typical Nupe courtyard	126
4.15	Outdoor cooking in area in a Nupe compound	126
4.16	Fore courtyards in Nupe compounds with rectangular rooms arranged in rows opening into the verandah	127
4.17	Typical Tiv compound layout	128



4.18	Typical Ate in a Tiv community	128
4.19	Typical Layout of a Gwari compound	130
4.20	Typical Gwari sub-urban dwelling layout	131
4.21	Typical Gwari compound courtyard	132
4.22	Typical Gwari hut opening to the courtyard.	132
4.23	Typical Earth heap as yam farm behind the compound; Silos for grains and tuber storage after harvest.	132
4.24	Side exit beside the kitchen to the farm; Outdoor functional areas in Gwari compounds	133
4.25	Entrance halls and alternate exits into typical traditional compounds	142
4.26	Entrance view of compounds in Geirei, Adamawa.	143
4.27	Entrance view of compound in Makurdi, Benue	143
4.28	Typical guest receptions in a community in Benue Nigeria	144
4.29	Outdoor open spaces for relaxation	145
4.30	Women engaging in outdoor relaxation	146
4.31	Entrance foyer furnished for outdoor living.	146
4.32	A typical outer courtyards in an ethnic dwelling at the root	147
4.33	Open spaces in typical ethnic settings	148
4.34	A typical compound in Makurdi showing courtyard domestic activities	149
4.35	Domestic activities around the courtyard and semi-enclosed spaces	150
4.36	Wet kitchens opening into the outdoor cooking area	151
4.37	Scenery of a typical ethnic setting at the root	152
4.38	Nupe dwelling arrangement at the root	153
4.39	Gwari dwelling arrangement at the root	154
4.40	Tiv dwelling configuration at the root	154
4.41	Fulani dwelling configuration at the root	154
4.42	Kanuri dwelling arrangement at the root	155
4.43	Common pattern discovered from cross-cultural comparison	155
4.44	Family Structure distribution	161
4.45	Residency duration of the respondents	162

4.46	Age distribution of the respondents	163
4.47	Number of times changes are made to the house	164
4.48	Occupants' residency cycle	165
4.49	Occupants' cycle and the type of changes made	167
4.50	Social activities measurement factor model	178
4.51	Family structure measurement factor model	179
4.52	CFA and Second-order structural model for tangible socio-cultural factors	180
4.53	CFA and Second-order structural model for intangible socio-cultural factors	182
4.54	CFA and Second order structural model for socio economic factors	184
4.55	CFA model measurement model for socio physical factors	186
4.56	Second-order structural model for socio physical factors	187
4.57	Second order Socio-cultural composite	190
4.58	Second order Socio-economic composite	191
4.59	Second order Socio-Physical composite	192
4.60	Gamma diagrams showing syntactical arrangements	194
4.61	Transformation types	196
4.62	Types of transformation: Conversion	196
4.63	Types of Transformation: Extension	197
4.64	Types of transformation: Additions	197
4.65	Types of transformation: Reconfiguration	198
4.66	Built environment control levels	199
4.67	Housing stress and timing adapted from Seek, (1983)	200
4.68	Transformation by conversion of space use in Makurdi, northern Nigeria	202
4.69	Initial and transformed two bedroom Public housing in Makurdi, northern Nigeria	203
4.70	Showing initial and transformed two bedroom Public housing in Sokoto, northern Nigeria	204
4.71	Showing gamma presentation and façade view of transformed two bedroom illustrated in (4.70) above	205

4.72	Initial and transformed three bedroom Public housing in Makurdi, northern Nigeria	206
4.73	Initial and transformed two bedroom Public housing in Katsina, northern Nigeria	207
4.74	Transformation by extension of entrance veranda and building recess in Jimeta, northern Nigeria	208
4.75	Transformation by extension of boundary line with erection of fence in Jimeta, northern Nigeria	209
4.76	Initial and transformed one bedroom Public housing in Yola, northern Nigeria	210
4.77	Initial and transformed one bedroom Public housing in Yola, northern Nigeria	211
4.78	Initial and transformed three bedroom Public housing in Minna, northern Nigeria	212
4.79	The gamma analysis showing the space distribution	213
4.80	Initial and transformed two bedroom Public housing, in Minna, northern Nigeria	214
4.81	Views of the initial and transformed two bedroom Public housing above (Fig 4.80)	215
4.82	Typical initial and transformed two bedroom Public housing layout in Minna, northern Nigeria.	216
4.83	Pictorial views of initial and transformed two bedroom Public housing illustrated in (Fig 4.82) in Minna, northern Nigeria	217
4.84	Initial and transformed two bedroom Public housing in Minna, northern Nigeria	218
4.85	Initial and transformed two bedroom Public housing in Minna, northern Nigeria	219
4.86	Initial and transformed three bedroom Public housing in Sokoto, Nigeria	220
4.87	A is initial design of a typical three bedroom unit, northern Nigeria	221
4.88	Transformed plan and gamma delineation of the layout illustrated in (Fig. 4.87)	222

4.89	Typical views of a transformed three bedroom Public housing illustrated in (Fig 4.87)	223
4.90	Initial and transformed two bedroom Public housing in Makurdi, Nigeria	224
4.91	Pictorial views of initial and transformed two bedroom Public housing (shown in Fig. 4.90)	225
4.92	Initial and transformed two bedroom Public housing in Makurdi, Nigeria	226
4.93	Typical three bedroom initial and transformed layout	227
4.94	Initial and transformed two bedroom Public housing in Minna, Nigeria	228
4.95	Transformation showing entrance reception and a fore courtyard with grill low fence	228
4.96	Deep freezers and washing machines kept at open and semi open spaces	248
4.97	Children study seats can be seen at the entrance foyer	250
4.98	Entrance foyers with furniture showing different functions conducted on it	251
4.99	Cooking utensils and outdoor cooking activities in open courtyard and passages	252
4.100	Spaces ordering as an outcome of Transformation	254
4.101	Spaces ordering as a product of Transformation	255
4.102	Family living rooms for activity, time and gender dominance	257
4.103	Plot overdevelopment in the course of transformation practice	259
4.104	Space configured in accordance with the social system	261
4.105	Common spatial pattern discovered in the transformed units replicating the root	263
4.106	a. Spatial arrangement showing consistency of flow	264
4.107	b. Spatial arrangement showing consistency of flow	265
4.108	a. Conversion of internally fused open spaces into enclosures	266
4.109	b. Conversion of internally fused open spaces into enclosures	267
4.110	Transformation with reference to initial layout	268
4.111	Transformation with reference to the initial layout (i)	268

4.112	Transformation with reference to the initial layout (ii)	269
4.113	Transformation with reference to the initial layout (iii)	270
4.114	Transformation taking advantage of side set backs	271

**LIST OF ABBREVIATIONS**

MEB	-	Man Environment Behaviour
CFA	-	Confirmatory Factor Analysis
EFA	-	Exploratory Factor Analysis
SC	-	Spatial Configuration
SEM	-	Structural Equation Modelling
BER	-	Behaviour Environment Relationship

**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
A	List of Related Journal Publications	302
B	Research Survey Questionnaire	303
C	Typical Traditional Layout of the Ethnics	311
D	Regression Weights	315
E	List of Housing Estates across the Study Setting	320
F	Transformed Layout of Houses Studied	324
G	Google satellite site layout of the Public housings	334
H	Fish Bone Research Frame work	339

## GLOSSARY

**Culture inclusion:** Operationally, the concept of culture regulation implies application of ideas and systems to standardize peoples' way of life in relation to certain goals. In the context of this study it includes regulating cultural expression in building layout by defining the threshold of what is applicable from the root that can be integrated in urban Public housing. This is in satisfying the spatial needs of diverse urban dwellers according to their lifestyle with maximum consideration of their norms.

**Evidence based design (EBD):** Design solutions whose process is based on findings and information from empirical research outcome.

**Integration Strategies:** It is the process of inculcating ideas, products and technologies of one group into another thereby accepting certain norms, practices and products of others. In this context it includes ways of achieving mutual social cohesion amongst a multi-cultural group's spatial provision with maximum satisfaction.

**Public Housing:** Mass housing initiated by government to provide accommodation for the low and medium income groups of the urban population. This has been on-going since after the independence, at present most of them have been sold to occupants based on owner occupier sales scheme.

**Spatial configuration:** It is the networking of complex activity spaces to successfully relate them with the social activities providing indigenous social meaning to spaces.



**Transformation:** Also understood as change, in the context of this research it consist of post occupational physical and spatial changes made to Public housing that alters the original design concept and in some cases extending with additional floor area.

**Root:** The term root is used in this thesis to refer to the traditional dwelling setup basically found in the country sides or rural areas of the region.

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 An Overview of the Study**

The concept of culture and space is common to the discipline of Architecture and success in their connection can be regarded as effectiveness and efficiency in architectural creations. Beyond the consideration of architectural creations as products lies the social activity that it accommodates with numerous challenges in their association. However, in the context of architectural creations there is the need to understand and resolve the complexities surrounding the association between culture and space. Indeed, clash of civilisation with ideology is a common consequence that results in failures of the relationship between architectural creations and their host, social communities. Likewise, the advancement in technology as a tool in reinforcing human habitation and resisting tragedies due to changing civilisation seems to override rather than support and refine the social meaning in dwellings. As a result, failure in bridging spatial communication between societal values and the morphology of houses occurs. It is therefore essential that the concept of space and culture is comprehensively understood in the context of housing in order to encourage user satisfaction of households. To address this concern, this research attempts to explore the operational paradigm of Public housing transformation phenomenon focusing on culture and space morphology in the context of northern states in Nigeria.

Harnessing the benefits and attributes in user initiated housing transformation for subsequent housing designs remain unpopular. Thus, housing transformation remains a salient aspect of the built environment in need of attention in order to address the glooming perceptions of housing users and understanding the norms and desires of the end-users. Besides, transformation phenomenon has been recognised as an inevitable outcome of built forms. Consequently, exclusion of cultural considerations in the spatial design of Public housing is postulated as the probable cause of housing transformation by resident of Public housing in Nigeria, due to functional conflict of activity space of the house form. Also, Public housing residents' liveability is usually worsened by housing stress that leads occupants into making unguided adoption of housing transformation decisions. Hence, this research sought to first understand the core activity and activity space use of the major ethnic groups in the region. Afterwards, probe cultural attributes associated with Public housing transformation from the users experience and perspectives. In the process examining the pattern of uncontrolled housing transformation due to residents' wisdom of satisfying cultural and spatial desires, presumed to create chaotic scenarios in the spatial configurations of Public housing units that came out of transformation.

Against this background, the research is inclined towards the study of spatial culture attributes at the root essentially to establish the cultural core of urban Public housing residents, and then examine the integration and modification of same in Public housing transformation in the urban environment in order to develop design and policy decisions' framework for Public housing production in northern states of Nigeria.

## **1.2 Background Study**

Universally, essentials of household social living are distributed and planned around activity spaces to meet the desires of privacy, security and functional satisfaction with changing factors of weather, status and cultural patterns (Correa, 1991) Besides, this system of spaces within a given composition is not necessarily

defined by material demarcation but can be subjective and culture influenced, as such, a basic concept in defining the physical world (Ekholm and Fridqvist, 2000). Contextually, social activities around typical African home extends to its surroundings, with such activities fully incorporated in the social setting and cultural pattern of their dwellings, house is therefore viewed as home and conceived beyond material demarcation. In such circumstance, the concept of culture becomes a significant determinant of space as it describes the system as well as the material components of space.

Although these material components of space describe the features and form of spatial distribution, its configuration and functional determinants are the most crucial. Because, users satisfaction and natural interaction lies in the social activities exerted on the host structure which is determined by the effectiveness of its configurations. Hence, poor spatial layouts and configurations impact social difficulties on users (Harvey, 2010). Moreover, the ultimate significance and exceptional fact around the built environment is not merely been the background to social performance but rather been social behaviour itself; reflecting insight values and patterns of its origin that determined its creation and configurations prior to encountering social activities (Hillier, 1996). Spatial configurations therefore, can be construed to be physical expression and layout of social behaviour. In effect, the validity of this assertion tends to reveal the significance of culture in spatial configurations of buildings. Nevertheless, there is the need to comprehend these social behaviours by understanding its meaning in space configuration as experienced by Public housing residents.

Culture in the outline of this study, refers to spatial practices, social behavioural attitudes, perception and lifestyle of groups (Hornby, 2006). Also, the concept of culture under consideration in this research concurs with the sociological findings, that describes cultures' analogic function in societies as similar to that of DNA (genetic material) in biological sciences, thus production of culture is believed to operate via socially structured systems (Battani and Hall, 2000). Based on this assertion, it means that the process of housing social activities, spatial configurations is a platform for cultural behavioural expression or as (Hillier, 1996) alludes and

stated earlier, is itself cultural expression. This synergetic relationship of space and culture even though subjective is of interest to this research, together with the complexities surrounding its morphological process in Public housing transformation.

Furthermore, the concept of household employed in this research comprises of residents living in a public housing unit. These inhabitants include the nuclear family members and relatives who live with the family. They comprise of head of the family, his wife or wives and their children. Other includes in-laws, house maid, brothers and sisters who permanently reside with the family. Collectively they form inhabitants and their activities impact on the existing housing space creating the need for adjustments. This consideration of the household covers those with direct regular social dealing with the house head. Such dealing was defined by (Schlyter and Schlyter, 1979) as group of people that live and have meals together. This was upheld by Schwerdtfeger, (1982) in his study on Hausa ethnic group in northern Nigeria and maintained in this research work. Therefore, linking buildings with users' personality is a task architects and architectural discipline experiences while achieving the pledge of expressing social ideals in physical forms, hence accomplishing the act of relating social values with architectural forms. Subtly, developing a reciprocal respect between built forms and the users that minimises consequences of abandonment (Brand, 1995). Vividly, clarifying the complexity in social creations (architectural products) of architecture remains unrestricted (Jones, 2011). In essence, ideological conflict between home-grown and universal perception of social systems and architectural products will thus require limitless analysis in understanding the need for a refined perception and paradigm in their concepts and relationships. The research work contained in this thesis later elaborated the epic and emic theory of cross-cultural research in the built environment which spectacularly addresses indigenous and universal perceptions. Accordingly, Hillier *et al.* (1984) noted the concept of social meaning as the most vital and in-built in architectural creations- buildings.

In addition, focus was on the analytic relationship of space organisation and social functions are targeted through resourceful theories with potential insights

grounded on natural (Bafna, 2012), practical, realistic and convincingly directed visions. On this basis this research illuminates social attributes of culture, and spatial configurations of buildings in the transformation phenomenon. Social attributes in this research are considered in its composite context of examining cultural influence and social meaning of residents living in Public housing and their experiences in transforming these buildings. The spatial configuration measured changes imposed on initial design of Public housing based on user initiated layout transformation. Research in Public housing is significant as little attention has been giving to historical unstable patterns (spatial morphology) of urban Public housing systems and arrangements *vis a vis* the quality and lifestyle of residents of these settings in Nigeria (Boyowa, 2005).

Existing studies on housing transformation have considered the subject on varying categories of income group, residency system and philosophical basis. They have consistently demonstrated the enrichment of harnessing transformation benefits, cultural inclusion and user satisfaction in public housing consumption. Table 1.1 shows some previous studies that have focused on housing transformation phenomenon hence positioning this research and defining its focus.

**Table 1.1** Previous Studies on Transformation Phenomenon

<b>Researcher</b>	<b>Philosophical Basis</b>	<b>Residency system</b>	<b>Income Class</b>	<b>Initial Building</b>
Seek (1983)	Decision to transform (Reason)	Owner-oriented	Middle income	Self-Built
Carmon (2002)	Decision to 'move' and 'improve'	Owner-oriented	High income	Self-Built
Tipple (2000)	Architectural qualities	Tenant-Oriented (later owners.)	Low income	Public Housing
Tipple and Salim (1999)	Socio-Economic effect	Government ownership	Low-income	Public housing
Sueca (2004)	Appraisal of Socio-Economic effect	General review	Low-income	
Kallus and Dychtwald (2010)	Communal effect of user initiated Transformation on urban environment	Government initiated units	Low income	Public housing
Khan (2008)	Architects' role in guiding transformation	Owner-Tenant oriented	Low income	Self-built
Nguluma (2003)	Spatial quality in transformation	Owner Oriented	Low-income	Self-built
Popkin <i>et al.</i> (2005)	Impact of housing Policy on users	Authority oriented Social Housing	Low income	Public Housing
Mirmoghtadaee (2009)	Change in Physical form overtime.	Owner Oriented	Traditional Houses	Self-built

As a result, this study focused on cultural paradigm in government initiated public housings targeted at the low income group. Major ethnic groups in the region were first established in order to ascertain core common space use patterns to be considered in the design framework. Accordingly, Mustapha, (2006) listed dominant ethnic groups in northern Nigeria to include Hausa, Fulani, Kanuri, Nupe and Tiv. Similarly, Dudley, (2013) enumerated the major ethnic groups in the region as Hausa, Fulani, Kanuri Nupe and Tiv. He further asserts that the dominance of Hausa

ethnic group resulted into other people speaking and adopting their ways of life across the region. Also, Anthony, (2013) cited Hausa and Fulani as the dominant ethnic group constituting two-third of the regions' population with Nupe, Tiv and Kanuri as other major ethnic groups in the region.

Additionally, the Kanuri ethnic groups are located in Borno and Yobe states of Nigeria. They are the third largest ethnic group in the region. Nupe ethnic group are found in north central Nigeria with over a million populations residing in Niger state with a majority practicing Islam (Austin, 2008). While the Tiv ethnic are located in Benue state, north central with a large number of the people practising Christianity. Meanwhile, the Gwari ethnic also known as the Gagy are often regarded as a minority ethnic group. However, they are next to the major five in population size and predominantly found in Niger and Kaduna states, and natives of the Federal capital Territory cohabiting with other ethnic groups. Apart from the Tiv that have larger population as Christian faithful, the remaining five ethnic groups are predominantly Muslims. The region enjoys abundance of relatively flat land across most parts with vegetative cover that ranges between savannah grassland around the central region to slight dry land at the northern coast. Laterite earth material, straw and hay which are gotten after crop harvest are commonly used as building materials at the country side across the region. However, modernisation has enabled the use of contemporary building materials in vernacular architecture in these places. The major occupation of the larger population is farming and craft work. Inter-ethnic marriages, social events, education and commerce are contacts that unite these ethnic groups.

Afterward, this research focused on government initiated Public housing in northern state capitals accommodating the low income group, with ownership later transferred to the occupants based on user occupier policy. The settings offer rich information from a range of heterogeneous units transformed from homogenous housing neighbourhoods. As one of the major contributions of this research is the interest in developing into design indices users' experience of cultural standards instituted in the transformation process.



In achieving the set goals, spatial configuration and culture in Public housing was studied. Public housing is regarded as a foremost classification and example of public buildings where cultural values and backgrounds are greatly expressed. It also comprises a major cultural landscape component in defining the urban environment. The hybrid cosmopolitan cultural landscape and social lifestyle of African communities requires critical consideration in the morphology of both urban environment in general and the built environment in particular. By implication Rapoport *et al.* (1980) suggest that in searching for environmental consequences and design requirements, cultural diversification should be considered and presented by cultural patterns as environments are culturally specified.

Although, social challenges associated with cultural diversities and spatial environments such as housing are enormous. Housing stress in a multi-cultural and multi-ethnic environment is one that is commonly associated with residents of Public housing particularly in Nigeria. But, interestingly residents from different cultural background operate and live together in Public housing buildings and neighbourhood evolving an environment that depicts unique culture different from the inhabitants' cultural origin, an essential postulation of ethnographic inquiry (Patton, 2005). However, this uniquely formed cultural setting is not devoid of social challenges but also impacted by it, for which the configurations of the systems plays significant role in resolving. As a result, cultural studies of building units, design and transformation of public buildings such as Public housing is essential and the main thrust of this research. Reflecting on this background in mind subsequent sections in this chapter introduces and sums the operational direction and problem this research is built to resolve.

### **1.3 Research Problem**

An appraisal of several previous studies particularly those associated to (Aderamo and Ayobolu, 2010; Alao, 2009; Awotona, 1990; Dassah, 2011; Ibem and Amole, 2011; Jaiyeoba and Aklanoglu, 2012; Jiboye and Ogunshakin, 2010; Ogu, 1998; Ukoha and Beamish, 1997) unveils Public housing residents' incessant

dissatisfaction due to housing stress and failure in Nigeria and by extension in Africa (Tipple *et al.*, 2004). Evidently it shows that communication gap exist between developers and Public housing residents. This outcome has led to a rise of unrestricted housing transformation in the quest by users' to satisfy their preferences and changing spatial needs, as well as in resolving issues related to housing stress. These studies on housing dissatisfaction and failures in Nigeria have commonly attributed such dissatisfaction to failed policies and implementations that are devoid of indigenous socio-cultural considerations and diversifications. Accordingly, Boyowa (2005) suggested detail research in scope and features concentrating on housing design, spatial configuration and space usage by groups and neighbourhoods based on their desires and inclinations.

In this regard and with respect to Public housing context in the study area, three consequential effects were identified. First, the lack of communication in Public housing production that often lead to non-occupation of the buildings by the targeted users (Olowoyo and Khan, 2012). Because the final products are apparently incompatible with the users' culture and their hybrid social activities, thereby making less social and ideological meaning to them. Second, although some groups choose to occupy these Public housing buildings, however they later abandon them. According to Seek (1983) users' choose to abandon dwelling when it resists adjustment to their needs and social lifestyle, thereby increasing their stress hence the decision to move. Thirdly, there are yet those who are unable to move and choose to impose adjustment without professional guidance, consideration for building standards, shape and geometry of the plot size and the existing structure. As a result, chaotic and unhygienic living conditions that jeopardize the health status of the community evolve and identified as a critical problem by this research. Unhealthy living condition due to poor Public housing quality aggravates the health status of occupants, increasing their stress and exposing them to health hazards (Oakley *et al.*, 2010). While researchers have studies on the first and second issues, little exist in addressing the later.

Meanwhile, clash of civilization and ideology in Public housing in Nigeria, is regarded as a consequence of failure in the relationship between these architectural

creations and indigenous social demands that appears in unguided housing transformation. These unguided transformations are embarked upon by residents in order to meet lifelong culture-inclusive dwelling arrangement. Because initial designs are devoid of users' desires & culture in layout integration. Moreover, this is intensified by the existence of perpetual lifelong link between urban residents and their roots (Mberu, 2005).

Accordingly, the study while focusing on overcoming culture exclusion highlights synthesis of standardized cultural ideals with spatial configurations as measures to check uncontrolled Public housing transformation in northern Nigeria context, packaged in design framework proposition in tune with the aim of the research. Because, progressing research findings into principles for designers is often ignored by researchers (Martin and Guerin, 2006). Successful establishment of the proposition is to facilitate the enhancement of Public housing design that considers culture attributes towards public health safety. Conversely, the continuous refusal of stakeholders to identify the socio-cultural content of historical, local and practiced social activities of residents in relation to their built environment advocates a denial of our responsibility as socio-spatial healers in the built environment. Since architecture is a process before being a product and if it is accepted as a problem solving process the need for inclusive cosmopolitan architectural character in Public housing design in Nigeria becomes essential. The requirement aims at identifying the cultural factors associated with Public housing transformations and incorporating it into the design process which is considered and explored by this research as a way out for practitioners. Subsequently, the need to explore the culture of Public housing residents, and establish the link with their experiences in housing transformation is elaborated in the succeeding section in order to define the research gap.

## **1.4 The Research Gap**

### **1.4.1 Environmental Context; Inadequate housing transformation studies with respect to northern part of Nigeria**

In the course of exploring the numerous studies on Public housing transformation phenomenon, the first study gap identified by this research is established on the environmental context validly related to (Rapoport, 2000) in his concept of culture specificity of design in relation to the environment. Several studies reviewed, investigating the subject matter and outlined in Section 1.3 above shows that Public housing studies on housing dissatisfaction and stress of inhabitants which leads to housing adjustment are found to be concentrated on the context of southern states in Nigeria and the nation's capital Federal Capital Territory Abuja, (FCT). Determining the geographical setting of this research is necessary in setting the foundation of the study and in analysing housing issues related to environments with similar cultural identity and meaning (*Ibid*). Therefore with insufficient literature on Public housing studies in northern states of Nigeria which requires attention, this research identified this deficiency as the first research gap for this study. Northern part of Nigeria historically comprise of ancient towns that are fast developing into cities with associated housing challenges. Most cities are fast becoming densely populated with housing expansions, which are fast affecting the quality of housing, the quality of cityscape and exposing dwellers to health hazards due to unhygienic settlements. Above all, these challenges need to be restrained in achieving housing sustainability in line with global trend of improving housing quality.

### **1.4.2 Existing Gap on Transformation Studies; The need to regulate indiscriminate housing transformation**

As shown above in Section 1.3, previous studies have established Public housing dissatisfaction in Nigeria with the dynamic housing growth through phases

of transformation inherent with inhabitants usually ignored by designers. As these studies sought to provide answers to the looming effect of the problems associated with Public housing dissatisfaction, they were limited in their findings. They emphasised on demography, location, land tenure and management as related reasons for transformation but ignored identifying how design considerations can project from users' experience. Also, they were limited in design framework details or guides in their way finding. In addition, the dynamic phenomenon characterised with housing which has resulted into the transformations in most of these Public housings in meeting users' cultural needs is deficient of detailed concentration. It means that the analytic approach of defining the attributes of Public housing transformation towards exploring the pattern in overcoming uncontrolled transformation which this research tries to focus on is uncommon.

In line with the housing adjustment theory of the choice to move out or to adjust the dwellings by transformation, the latter is seen to be common among Public housing occupants (Tipple, 2000). Truly, existing studies on housing transformation such as (Carmon, 2002; Khan, 2008; Popkin, *et al.*, 2005; Seek, 1983; Sueca, 2004; Tipple and Salim, 1999; Tipple, 2000), have established the inevitability of housing transformation. The dynamism leading to housing transformation has commonly been associated with growth of households. However, these transformations in developing nations such as those observed in Ghana and Zimbabwe change the layout of modern buildings into traditional patterns (Tipple, *et al.*, 2004). Therefore synthesising transformers' grounded culture determinants as design indices is uncommon, consequently providing a significant gap for this research.

### **1.4.3 Culture content of Public housing Users in Design; Meta-synthesis of grounded culture attributes as design indices**

While evoking Public housing residents' dissatisfaction, culture has been identified as significant factor in vernacular architecture especially in developing countries. It has influence housing pattern in urban settlements in these nations taking its root from vernacular dwelling forms. Crisis between culture in vernacular

architecture and modern housing ideals can be seen to be evident in the transformation of Public housing units. It appears as a clash of civilisation and ideology with the need to revitalise cities by means of technologically advancing tools on prevailing social settlements with natural, historical and cultural origins. Social representation theory therefore, suggests that differences in ideological understanding often lead to a stark interpretation of the consensual comprehension (insider, root perception) and the reified (outsider, systematic) perception of perceived plights (Pearce *et al.*, 1996). It is a contemporary challenge that has left researchers with a debate on the option to adopt in determining the process towards solving housing issues in urban environment as advocating for sustainability concepts prevails. For instance (Mosha, 2011) noted the use of foreign planning ideas in developing nations, while ignoring the dynamism in their local dwelling culture, and suggested a hybrid of technological and indigenous cultural fusion in proffering proficient design solutions. Similarly Abbaszadeh *et al.* (2009) identified the ruin of traditional standards and their effect on current Persian Public housing complexes to have favoured adoption of western style in emerging contemporary high-rise Persian complexes. However, they both assert that the quality of modern living spaces can be improved if useful standards and ideals of traditional architectural spaces are considered. In addition (Boyowa, 2005) conducted a study on the changing urban form and organisation in Nigeria and suggested an application of public and private reinforced programmes approach on communal designs. This essentially implies staging a program of urban growth that mixes traditional social values and culture of the people with contemporary housing pattern as the solution to looming catastrophe of urban living in Africa. The existing trend in Nigeria Public housing is observed to have ignored the cultural content of inhabitants. It is evident therefore that there is need to conserve cultural content in considering contemporary housing designs. Appropriately, previous studies such as (Chiu, 2004; Odebiyi, 2010; Rikko and Gwatau, 2011) have emphasised cultural conservation in housing particularly in Nigerian architectural context, yet little exists in defining how contemporary designs can be synthesised with vernacular values as considered to be explored by this study. Therefore, this exhaustive review suggests a lifelong connection of city migrants with their roots that has been identified for exclusive research (Mberu, 2005).

But the urban architecture is about standardisation and planned neighbourhood which is uncommon with vernacular architecture. In this regard, (Khan, 2008) specifically raised questions regarding the appropriateness and degree of synthesising or negotiating practiced cultural values to particular contextual architecture. Interestingly, inhabitants of the study settings are from different backgrounds. Although, density and technology often restrain and limit the integration of vernacular principles in contemporary Public housing designs nevertheless, the study of culture would sieve and reveal the cultural cores to be considered and those intangibles that should be left out thereby defining the threshold. Therefore, examining the cultural content of residents in Public housing transformation is the third research gap for this study to undertake.

#### **1.4.3.1 Evidence Based Design (EBD) and Public housing Transformation**

The overcoming of cultural exclusion in housing design requires an understanding of a workable composite of socio-cultural structure, that evolves from critical thinking in housing analysis as envisaged by (Chiu, 2004) towards a broad framework development in achieving sustainable housing. This is relevant and in consonant with the recently emerged concept of design referred to as evidence based design (EBD), a paradigm that is attracting and gradually changing the creative thought of designers (Vischer and Zeisel, 2008). Positive planning, design and management decisions on built environment stems from evidence based design, an unlimited process of knowledge congruence based on the understanding of collections of diverse studies overtime (Becker and Parsons, 2007). Therefore, achieving the goal of this research in examining culture content contributes to the actualisation of EBD framework for Public housing design with culture and transformation benefits simultaneously addressed. So far, this method of harnessing the culture content and proposing it as components of EBD in Public housing is yet to be applied. This is therefore an approach uncommon in housing research and identified as a research gap to build on.

#### **1.4.3.2 Post-occupancy Public housing Neighbourhood assessment**

In recent times, neighbourhood effects have supported the influence of dysfunctional cultural characters and are common in the inner-city neighbourhoods due to cultural exclusions. However, further investigation to establish if cultural exclusion explains the relationship between neighbourhood characteristics and individual actions are required. Similarly, urban housing lay emphasis on property boundaries inhibiting social interaction and segregating users to enclosed boundaries, unlike in the traditional settlements where dwellings are interconnected with open communal and functional spaces. Social activity that fuses households together equally links their physical forms together. It therefore requires neighbourhood design decisions on housing adjustment choices that affects the cultural rights of others. The research therefore seeks to determine socio-cultural issues at the neighbourhood decision level towards establishing best practices for diverse cultural interests associated with Public housing occupants.

In essence the dearth of empirical evidence on the best practices of culture inclusiveness in activity spaces of Public housing design, derived from users' transformation experiences, most often overlooked by practitioners is considered the big gap to be explored by this study.

### **1.5 Research Aim**

The research aim is to develop a culture responsive design framework that evolves Public housing users, and are grounded on their initiated transformation experience towards the proposition of potential design solutions.



## 1.6 Research Objectives

In achieving the aim, the objectives as outlined below are considered.

- i. To identify core culture spatial attributes in the dwelling configurations of focal ethnic groups from the root.
- ii. To investigate the impact of core culture determinants on users' spatial transformation of Public housing in the urban setting.
- iii. To generate spatial patterns that evolves from Public housing transformation process.
- iv. To synthesize cultural determinants and spatial patterns in order to establish design index grounded on culturally impacted findings that will guide in developing culture responsive Public housing design.

## 1.7 Research Questions

Three research questions were generated from the research gaps which cover the research context of developing design indices from transformation studies and considering culture content in Public housing design. Thus, the following questions were asked;

- i. What core culture related spatial attributes of vernacular dwellings from the major ethnic groups are appropriate for Public housing design?
- ii. How effectively does common culture attributes impact on spatial patterns of transformed houses as well as the transformation process?

- iii. How does grounded and consistent cultural attributes synthesize to inspire Public housing design patterns?

These three research questions (RQs) are sequentially connected in addressing the aim of this study. First, is the need to identify; “*what culture*”, “*which ethnic group*” and “*how do they relate with space*” as fundamentals in the inquiry of common cultural and spatial attributes that are core and are often reflected in Public housing transformation. Strategic realization of these sub-questions responds to the expectations of objective one of this study. The second research question seeks to examine “*how cultural attributes identified from literature and the root reflects in the transformed layouts*” of Public housings. This is the significant stage that addresses objective two and then connects the fundamentals with the main body of the research; it is the analytic stage that relates theory and practice leading to desired and acceptable standards. Third, and last research question is directed towards “*seeking for ideals from the findings in order to establish grounded framework on Public housing design.*” Thus, the main research question for this study is designed to reveal “*how cultural core attributes of main ethnic groups as reflected in user initiated transformation layouts can be grounded to direct design ideals in Public housing design*”; a task when established is expected to realize design solutions for controlling unguided housing adjustments while accomplishing the goal of this research.

## **1.8 Research Significance**

This study has identified from background studies a remarkable trend in declining traditional perception of culture and spatial configuration due to rapid acculturation in the urban environments. Priority seems to be emphasised on evolving space configuration into building products rather than developing it through a process that considers people and their social interaction with their spaces. Public housings, like any other public building such as hotels, institutions, schools, hospitals, commercial and civic buildings are social environment that brings people

of diverse cultural background together to socially interact with their buildings. The functional challenges experienced in culture sensitive public buildings also remain pertinent to Public housings. The imaginative and cultural functions in developing their layouts to be specific and for buildings generally are acknowledged to be twin fold, unequal and difficult, consequently architects frequently compromise either of the two for the other (Bafna, 2012). It may perhaps have accounted for the conflict between impact of cultures as in vernacular architecture and the influence of modern civilization on urban housing.

Civilization is the key distinguishing factor between the rural and the urban environments, and between the present and the past. Every nation, at one time or the other had civilization in rural environments transformed. Also, it is a common fact that for most European and Western countries had a short time lag in the transformation of rural civilisation. De-urbanization and sub-urbanisation programmes aimed at developing the rural areas and creating sub-urban environment to discourage migration directly from rural to urban centres equally accelerated their rural transformation. However, a contrary situation is experienced in most developing countries in Africa and across the globe particularly in Nigeria where the time lag as experienced is longer. Consequently, migration is critical, with the migrants arriving urban centres with rural mind-sets and its prevailing social ideological lifestyle. These mind sets are reflected as cultural values in their spatial choices. Therefore, the need for gradual transformation in urban housing is inevitable just as available housing products and its environment seems to be devoid of social meaning to the users. Consideration and integration of cultural values into Public housing is therefore crucial and highlights a significance of this research.

Secondly, analysts have debated on failures in Public housing planning and management for low and medium income group due to socio-cultural issues across developing nations, Africa in particular (Abbaszadeh, *et al.*, 2009; Awotona, 1990; Ejigu, 2012; Oladapo, 2006; Sulaiman and Yahaya, 1987; Ukoha and Beamish, 1997). This has been attributed to lack of indigenous socio-cultural meaning and content in the configurations thereby creating mere physical structures (houses) rather than social spaces (homes). These physical structures established with

prevailing colonial ideologies and influences in developing nations are characterised to consist of official norms and standards of physical planning and development control inflexibly framed, culturally, socially and psychologically foreign to indigenous concepts (Ikejiofor, 1998). Such principles are essentially restricted, designed for western psycho-social and cultural context (Abbaszadeh, *et al.*, 2009) and has undermine the relationship between social life and the built environment; as well as achievements in housing delivery to be precise. Eventually, functional, technical and management complications are consequentially inherent in the design and evident in the production of these buildings (Ejigu, 2012) However, Abbaszadeh, *et al.* (2009) suggested the integration of traditional socio-cultural needs in Public housing complexes to support the development of robust neighbourhood communities in non-western cities recommending further studies in that regard. Similarly in accord with Crabtree and Hemmings (2001), numerous functional needs of contemporary dwelling setting requires vernacular system of household spatial arrangement and interactions to guide its design.

Furthermore, recent researchers have asserted that indigenous circumstances of social layout (period of its existence and dwelling characteristics) plays a dynamic role in answering modern-day housing problems (Dincyurek and Turker, 2007; Gotham, 2003; Ikejiofor, 1998). They also affirmed that the principles of contemporary housing developments could be attained while sustaining existing unique traditional configurations. Consequently, establishing and controlling the limits among housing environment in traditional cities are emphasised as instruments towards changing the physical environment over time (Akbar, 1988). Against this backdrop, the current study has equally highlighted as significant, developing a control paradigm in design and planning of Public housing hinged to the background information of socio-cultural needs of occupants.

Finally, the changing perception of culture and Public housing due to acculturation, growth in urban population and cultural diversification of residents and by extension urban dwellers, as well as the need for review of management policies due to urbanisation is critical. Accordingly, there is need for this paradigm in Public

housing development for the urban population in the northern region, and by extension in Nigeria.

The outcome of the research is projected to;

- i. Provide data for EBD- utilising available information from empirical research for design decisions, a criteria that will enable architects, developers and other stakeholders in the industry to conceive, create and manage Public housing design anticipating changing cultural values and planning with projection for future needs which has been stressed by (Afolayan, 2009; Boyowa, 2005).
- ii. Also to provide a linkage in understanding housing settings in rural and urban environments towards appreciating the pattern of change influenced by the traditional house form to be utilised in the production of Public housing that has been promoted by (Davis, 2000; Kotharkar and Deshpande, 2012).
- iii. It will serve as an effective information instrument for government housing policy towards ensuring urban environmental sustainability and quality in housing supply to pace up with rapid rate of urban growth. This is critical considering the huge investments made by government and private developers in facilitating the provisions of Public housings.
- iv. To provide a platform of synergy between the appropriate local social meanings of architecture in a technologically driven housing production that promotes indigenous urban architectural character.

## **1.9 Research Methodology Outline**

Bearing in mind the statement of problem outlined by this research and the objectives set out to be achieved two basic patterns of study emerged, cultural and physical studies. Social attributes and spatial definition are required in achieving the

goal of this study thus, positions the study as a qualitative research dimension. Therefore, both factors were considered in sampling dwellings and data collection for this study.

In the first instance, the choice of settings and samples for this research was based on the interest of the study in getting the required data. Consequently, purposeful sampling approach with information based criteria was used in the selection of both the rural ethnic settlements at the root and the Public housing in the urban environment.

Secondly, in conducting evaluative inquiry into spatial configurations and social behaviours ethnographic studies are widely used in spite of numerous criticisms the method has received. To buttress this, in housing research ethnographic strategies is asserted to be widely centred on relegated silent minorities' experiences, which is rarely considered in the wider social principles and housing policy arguments (Ronald, 2011). Obviously, this can be attributed to severity and quantum of housing problems that is associated with the "minorities." Ethnography applies the use of participant observation and instruments such as, interview guides, spatial mapping and photography amongst other strategies in accessing required information. The qualitative approach was also used for data interpretation to analyse findings from the field survey in the urban Public housing multi-case studies. The field survey had qualitative data first measured by quantitative approach through the adoption of questionnaire as the tool for survey at the Public housing in the urban settlements. Consequently, structured close ended questionnaire with Likert scaling was used to obtain required data. The survey is directed to reveal both the level of cultural expression, transformation and spatial choices of Public housing users. This aligns with the problem statement and the objectives of the study as earlier stated. Similarly, the use of transformation pattern analysis with the aid of gamma diagrams was adopted in comparing initial and transformed layouts of Public housing in the urban settings with its data drawn through participant observation.

Data analysis using descriptive analysis, content analysis, psychometric and of cases studied was conducted. The use of advance statistical analysis package IBM

SPSS Statistics 20 was employed in the organisation of data for subsequent psychometric analysis after the field survey in Public housing settings and the return of the questionnaire forms. This was accordingly supported by the use of Structural Equation Model (SEM-AMOS) in the structural analysis of the factors for further confirmatory path analysis (CFA). Analytic method is identified with conventional social science research, for connecting and verifying factors of physical environment to quantifiable behavioural occurrences by hypothetical techniques (Vischer and Zeisel, 2008).

It therefore implies that both qualitative and quantitative strategies of data collection and analysis are applied in the course of this study therefore using combined multi strategies. The details of these applications are presented under the methodology Section in Chapter 4. The results showing transformation pattern, adjusted spaces, relationships and dominancy in spatial preferences are presented in charts, tables, figures, models and descriptive narrations for further synthesis.

## **1.10 Research Scope and Limitation**

This research in housing transformation which focuses on a typical form of social building is centred on government initiated Public housing common in northern region of Nigeria. Basically a transactional phenomenological research it sets out to investigate person-environment relations through space and activity space relationships.

### **1.10.1 Research Study Domain**

The study seeks to explore the user-initiated housing transformation experience of Public housing dwellers. However, the built environment is broad with a wide range of areas for study. Hence, this led researchers to identify control levels of the built environment to support decision frameworks by stakeholders. Wikberg

and Ekholm (2009) did classified control level while relating man and the built environment as shown in Table 1.2. In their classification users control activity space and the network of spaces within and around the building. The building is controlled by managers or developers while at neighbourhood and city levels a higher authority usually government agencies are in control. This study focuses on the building control level of Public housing as a component of the built environment based on the above classification. Equally, Habraken (2000)'s five levels of control in the built environment that shows the interdependency of one level over the other (Table 1.3), and modified into space-element relationship in order to explicitly present the research domain. Thus, room to block space levels constitute the domain of this study.

**Table 1.2** Control level, elements and actors in the system man-built Environment

<b>Control actors</b>	<b>Controlled built element</b>	<b>Control level</b>
City authority	Infrastructure (Streets, sewer etc.)	City, Neighbourhood
Building management	Building related building elements	Building
Building user organization	Organisation related building elements	User organisation Space
Building user	Activity related building elements	Activity space

Source: (Wikberg and Ekholm, 2009)

**Table 1.3** Control Levels in the Built Environment

<b>Space</b>	Furniture	Room	Building	Block	Cluster	District	City
<b>Element</b>	Utensils	Furniture	Rooms	Building	Blocks	Clusters	Districts

Source: Adapted from Habraken (2000)

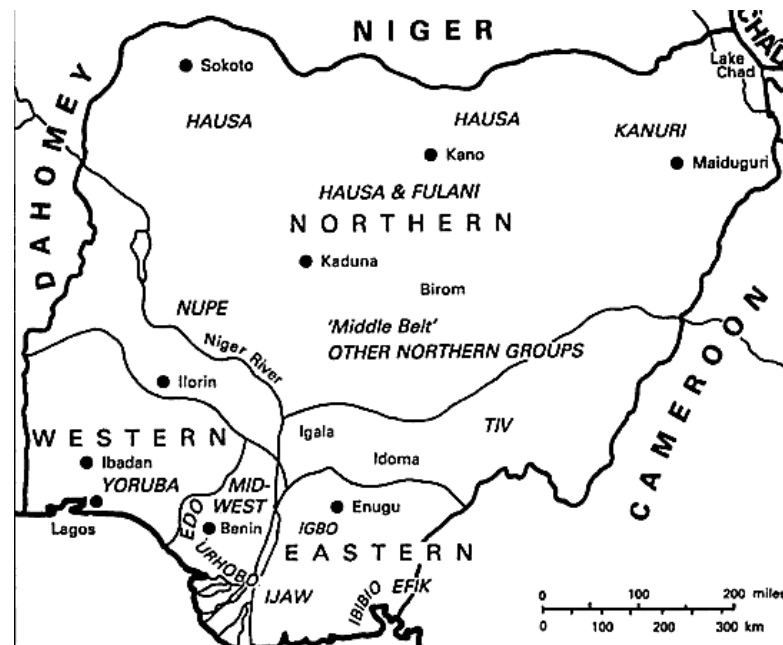
### 1.10.2 Environmental Settings; Northern region of Nigeria

This study was conducted in selected state capitals in northern Nigeria which represents the predominant sampled population based on ethnic criteria. There, Public housing in urban environment that houses low and middle income group constitutes the target population for survey on one hand. On the other hand, traditional house pattern of main ethnic groups in the region are focused upon in

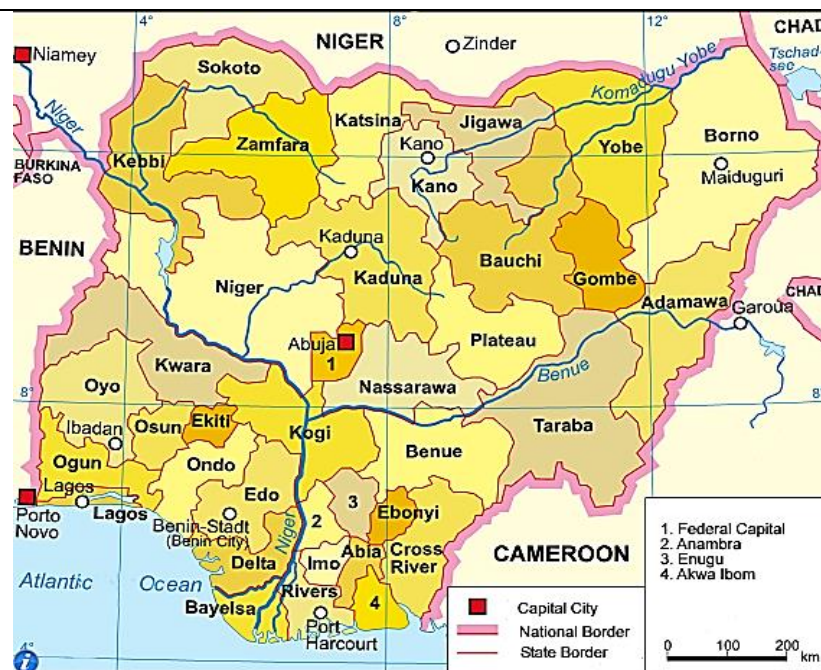


identifying the spatial-cultural attributes from the root. The methodology section in Chapter 4 elaborates further on the strategies adopted in the choice of urban settings and the criteria used in selecting Public housings across the region for the purpose of this study. However, the existence of three major language distributions across the regions in the country informed the choice and limitation of this study to one of the region, northern Nigeria. Figure 1.1 shows the map of Nigeria with the three regions and the major ethnic languages. The political map of Nigeria showing the state distribution and the capital is contained in Figure 1.2 while the ethnic distribution map indicating the geographical location and coverage of major ethnic groups is contained in Figure 1.3. The percentage of ethnic population in Nigeria is usually a subject of contestation (Mustapha, 2004). However projections are usually based on the last national population census that captured ethnic population rating showing five major ethnic groups found in northern Nigeria as contained in Table 1.4. These ethnic groups include Hausa, Fulani, Kanuri, Nupe and the Tiv ethnic groups. Similarly, other literatures considered the Gwari ethnic group among the major ethnic groups in northern Nigeria. The Hausa ethnic group are the most dominantly spread across the region with the language spoken across states in northern Nigeria. Their cultural values have impacted on other ethnic groups across the region. The Fulani and Kanuri ethnic groups are predominant in the north eastern Nigeria while the Nupe Tiv and Gwari ethnic groups are located within the north central zone of Nigeria.

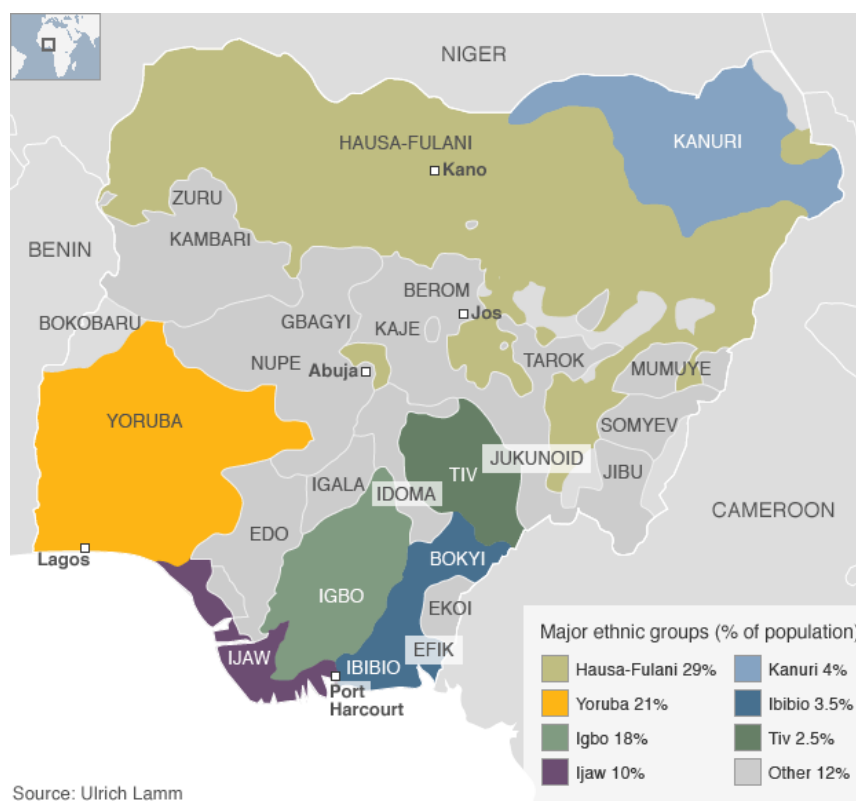
The three major regions in Nigeria are shown in Figure 1.1 capturing the location of the major ethnic groups. Also the state distribution across the country is shown in Figure 1.2. Lastly, the ethnic distribution is presented in Figure 1.3.



**Figure 1.1** Map of Nigeria showing the three major regions of Northern, Western and Eastern Nigeria. Source: (Diamond, 1988)



**Figure 1.2** Map of Nigeria showing the States distribution. Source: Google Image



**Figure 1.3** Map of Nigeria showing Major Ethnic distribution.

Source: Ulrich Lamm from Goggle image. **Note:** This map considers Hausa and Fulani ethnic groups as one due to their distribution across the region.

**Table 1.4** Ethnic Distribution of Nigerian Population: 1952/53-63

Ethnic Group	% 1952/53 Census	% 1963 Census
Edo	1.5	1.7
Fulani	9.76	9.9
Hausa	17.81	18.2
Ibibio	0.25	0.28
Igbo	17.60	16.6
Kanuri	4.18	4.1
Nupe	1.15	1.2
Tiv	2.54	2.5
Yoruba	16.2	20.3

Source: Mustapha, (2004)

### 1.10.3 Language Distribution in Nigeria

Nigeria is a nation with over 350 ethnic groups speaking about 250 languages; it is multi linguae just as it is multi ethnic. This has made English language to remain the official language adopted in formal systems. However, the initial geographical division of the country into three regions for administrative and political purposes gave birth to the Northern, Western and Eastern regional classifications. Also, the existing national language policy has constitutionally recognised the dominant languages in these three regions respectively as official languages even though it largely remains in principle and usually limited to the regions (Adegbija, 2004). This they ascribe to the fact that a large number of citizens within these regions can speak the languages coupled with the high rate of illiteracy that made English language not to common in informal interactions among the majority. These languages include Hausa common to the North, Yoruba in the South West and Igbo in the South East. Regional languages tend to unify the diverse ethnic groups across the regions. In multi-ethnic communities, minorities usually feel segregated by the majority thereby enhancing the majority's language proficiency as a tool towards integration (Gijsberts and Dagevos, 2007). Regional languages in Nigeria have significantly integrated the minorities and influenced the house form and the built environment experienced within the regions. It is from this background that the research has seen the need to study the common cultural strands that prevail in Public housing morphology in northern Nigeria which lacks enough coverage by previous studies.

However, this study suffered limited coverage of Borno state where the Kanuri ethnic groups are dominant as a result of the rising social tension experienced in some parts of the state during the data collection exercise. Also, it is beyond the scope of this study to examine the sizes of transformed spaces as the focus is on the transformation philosophy and the process rather than the unit space size difference.

## 1.11 Thesis Structure

This research work is organised to comprise of four Sections with six chapters contained within it as follows;

### **Section 1: Introduction**

The introduction is preceded by the preamble as well as opening pages which include abstract, acknowledgement, table of content, dedication and certification, list of tables and figures, list of appendices and the glossary.

**Chapter one:** This chapter introduces the study, where the background to the study is captured. The background is the sum, of the literature that defines and support the theoretical framework of this research. The problem the research intends to address is outlined in order to present the picture for proper comprehension of the research. This is made clearer and more specific by the aim of the research which defines the research goal. The aim is preceded by the research gap while the chapter proceeds with objectives which translate later into the research questions. Next is the significance of the research which sequentially follows the research questions and then a brief outline on the methodology of this research. The research scope coverage and the limitations of the study is next. The chapter then concludes with definition of key terms and the thesis structure.

### **Section 2: Literature Review**

The literature review section is grouped in two chapters, while chapter two focuses on the architectural process and product of Public housing chapter three concentrates on the concept, attributes and relationships of culture, space and transformation phenomenon towards developing the theoretical framework of the research.

**Chapter Two:** Literature on Public housing as common public building was reviewed to acquaint the study with historical trends in housing provision. Similarly

the chapter covers review of previous studies on residents' dissatisfaction and Public housing failures in the context of the study settings. The coverage of literature on Public housing in Nigeria defines the context of the study and describes the identified gap in context.

Subsequently, the wealth of scholarly record of previous studies on the subject matters of culture and space as well as trends in their relationships was reviewed as a foundation for developing the theoretical and conceptual frameworks respectively for the study. This chapter also gives account of the review on housing transformation phenomenon. Existing literature on housing transformation were reviewed to acquaint the study with the challenges as well as issues central to transformations within the cultural domain. It is noteworthy that Public housing adjustments are most central to this research.

### **Section 3: Methodology**

The methodology section covers two chapters that address the methodological framework of the research work and the account of the field work conducted, as well as discussion of results. First is the research methodology, where the research planning and procedure as well as the analytic process are discussed in describing how the research was conducted. The various sections contained in the chapters are research paradigm, research planning, data collection and analysis; and presentation of results and findings inclusively.

**Chapter Three:** This chapter describes in detail the research procedure by describing philosophical paradigm, theory, methods, strategies and tactics employed in conducting the research work. It responds to the research problem and questions, detailing of how the research was conducted. It sums, by defining the path of methodology and research design. Data collection and analysis process were discussed in detail in this chapter. In addition, it describes and outlines the process adopted in establishing the trustworthiness of the research process featuring the steps and strategies adopted in line with scientifically accepted procedures to justify the methods and instruments applied in the research.

## **Section 4: Conclusion**

**Chapter Four:** This chapter presents and report the results from the analysis and the discussion of the result in order to search for analytic outcomes.

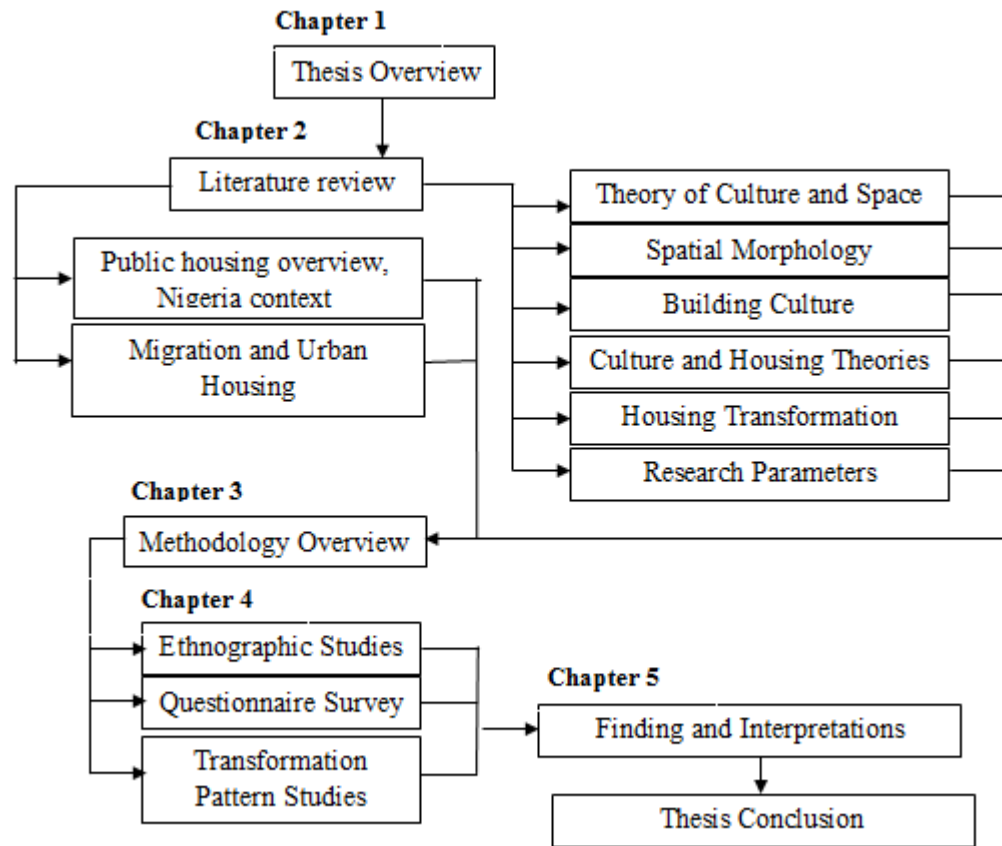
Afterwards, this chapter concentrates on the presentation of research findings from the preceding section. Adopting a structured pattern it described and organised the findings to show a clear view of the research outcome relating it with the aim and objectives of the study. Furthermore, it describes how the results address the research questions. It then further through a logical trail gave an interpretive account of the deductions from findings in developing the final outcome of the research.

**Chapter Five:** As the concluding chapter it covers the conclusion made based on the analysed results and findings of the study. Here the contribution of the study is clearly outlined. The implications of the outcome with the conclusions arrived at are also clearly stated. Based on these the study made recommendations and determine areas for further research. This framework is schematically presented as the flow of research process and thesis chapters in Figure 1.4.

**Conclusion:** This final part of the thesis summarizes the entire dissertation giving brief coverage of the various sections and chapters that compose the study.

**References** captured an outline of cited works in the body of the dissertation.

**Appendixes** include necessary attachments to the dissertation that have enhanced the conduct of the study.



**Figure 1.4** The flow of research process and thesis chapters



## REFERENCES

- Abbaszadeh, S., Ibrahim, R., Baharuddin, M. N. and Salim, A. (2009). Identifying Persian Traditional Socio-Cultural Behaviors for Application in the Design of Modern High-Rise Residences. *International Journal of Architectural Research*.
- Adegbija, E. (2004). Language policy and Planning in Nigeria. *Current Issues in Language Planning*. 5(3), 181-246.
- Aderamo, A. and Ayobolu, D. (2010). Spatial structure of housing quality in Ilorin, Nigeria. *Research Journal of Social Sciences*. 1(5), 12-21.
- Aduwo, E. B. (2011). *Housing Transformation and its Impact on Neighbourhoods in Selected Low-income Public Housing Estates in Lagos, Nigeria*. Ph.D. Covenant University.
- Afolayan, A. (2009). *Migration in Nigeria: A Country Profile 2009*. International Organization for Migration.
- Ahrentzen, S. (2006). More than just looking good: Toward an evidence-based design practice in affordable housing. *Retrieved January*. 30, 2008.
- Ajanlekoko, J. S. (2001). Sustainable housing development in Nigeria- The financial and Infrastructural Implication *International Conference on Spatial Information for Sustainable Development*. Nairobi, Kenya,
- Akbar, J. (1988). Crisis in the built environment: The case of the muslim city. *Singapore: Concept Media*. Akbar investigates Islamic principles for constructing and managing the " built environment." *Reviewed: American Journal of Islamic Social Studies*. 5(2), 279-281.
- Alao, D. A. (2009). *A Review of Mass Housing in Abuja, Nigeria: Problems and Possible Solutions towards Sustainable Housing*, Eastern Mediterranean University (EMU).

- Anderson, J. C. and Gerbing, D. W. (1992). Assumptions and Comparative Strengths of the Two-Step Approach Comment on Fornell and Yi. *Sociological Methods & Research*. 20(3), 321-333.
- Anthony, K. O. (2013). *The Nigeria dependency management and leadership development in post world war ii colonial Nigeria*. AuthorHouse.
- Austin, P. (2008). *One Thousand Languages: Living, Endangered, and Lost*. University of California Press
- Areas, O. F. U. and Agglomerations, U. (2012). World Urbanization Prospects The 2011 Revision. *Population*.
- Atolagbe, A. M. O. (1997), *Affordable shelter for the urban low-income classes in Nigeria: Local resources strategies*. In Amole. *Conference Proceedings; The House in Nigeria (274-279)*. Obafemi Awolowo University, Ile-Ife, Nigeria:
- Awotona, A. (1990). Nigerian government participation in housing: 1970–1980. *Habitat International*. 14(1), 17-40.
- Bafna, S. (2012). The imaginative function of architecture: A clarification of some conceptual issues. *Proceedings of the 2012 Proceedings of the Eighth International Space Syntax Symposium, Santiago de Chile: PUC*, 8117.8111-8117.8119.
- Balian, E. S. (1994). *The graduate research guidebook: A practical approach to doctoral/masters research*. University Press of America.
- Bartlett, J. E., Kotrlik, J. W. and Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information technology, learning, and performance journal*. 19(1), 43.
- Battani, M. and Hall, J. R. (2000). Richard Peterson and cultural theory: From genetic, to integrated, and synthetic approaches. *Poetics*. 28(2), 137-156.
- Becker, F. and Parsons, K. S. (2007). Hospital facilities and the role of evidence-based design. *Journal of Facilities management*. 5(4), 263-274.
- Benjamin, W. J. and White, K. (1993). The development and validation of a self-report measure of school skills. *Educational and psychological measurement*. 53(2), 541-549.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin*. 107(2), 238.

- Berg, B. L. and Lune, H. (2004). *Qualitative research methods for the social sciences*. (Vol. 5) Pearson Boston.
- Berger, P. L. and Luckmann, T. (1966). *The Social Construction of Reality*. Garden City, NY: Anchor.
- Blench, R. and Dendo, M. (2004). Position Paper: Migration. *London: DFID*.
- Blum, D. K. and Amy, P. E. (2005). Strategies to win: Six Steps for Creating Problem Statements in Doctoral Research. *Journal of College Teaching and Learning*. 2(11), 47-52.
- Boyowa, A. C. (2005). Changing urban housing form and organization in Nigeria: lessons for community planning. *Planning Perspectives*. 20(1), 69-96.
- Brand, S. (1995). *How buildings learn: What happens after they're built*. New York: Viking Penguin.
- Bride, B. E. (2004). The impact of providing psychosocial services to traumatized populations. *Stress, Trauma, and Crisis*. 7(1), 29-46.
- Brown, T. and Moore, M. T. (2012a). Confirmatory Factor Analysis. In Hoyle, R. H. (Ed.) *Handbook of structural equation modeling* Guilford Press.
- Brown, T. A. and Moore, M. T. (2012b). Confirmatory Factor Analysis. In Hoyle, R. H. (Ed.) *Handbook of Structural Equation Modelling* (pp. 361-379). 72 Spring Street New York & London: The Guilford Press.
- Browne, M. W. and Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research*. 21(2), 230-258.
- Bruen, J., Hadjri, K. and Meding, J. v. (2013). Design Drivers for Affordable and Sustainable Housing. *Journal of Civil Engineering and Architecture*. 7 (10), 1220-1228.
- Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing*. 1(1), 55-86.
- Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Routledge.
- Carmon, N. (2002). User-controlled housing: Desirability and feasibility. *European Planning Studies*. 10(3), 285-303.
- Castells, M. (1996). The space of flows. *The rise of the network society*. 1, 376-482.

- Castells, M. and Sanyal, B. (2005). Space of flows, space of places: Materials for a theory of urbanism in the information age. *Comparative planning cultures*. 45-63.
- Chau, P. Y. and Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach\*. *Decision Sciences*. 32(4), 699-719.
- Chinda, T. and Mohamed, S. (2008). Structural equation model of construction safety culture. *Engineering, Construction and Architectural Management*. 15(2), 114-131.
- Chiu, R. L. (2004). Socio-cultural sustainability of housing: a conceptual exploration. *Housing, theory and society*. 21(2), 65-76.
- Chow, W. S. and Chan, L. S. (2008). Social network, social trust and shared goals in organizational knowledge sharing. *Information & Management*. 45(7), 458-465.
- Correa, C. (1991). Space as a resource. *Building and Environment*. 26(3), 249-252.
- Cottrell, R. R. and McKenzie, J. F. (2005). *Health Promotion and Educational Research Methods: Using the Five chapter Thesis?Dissertation Model*. Sudbury, MA: Jones and Barlett Publishers.
- Crabtree, A. and Hemmings, T. (2001). The Sociality of Domestic Environments.
- Creswell, J. W. (2012). *Educational Research Planning, conducting and Evaluating Quantitative and Qualitative Research*. (4th edition ed.) Boston, United States of America: Pearson Education Inc.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*. 16(3), 297-334.
- Cuba, L. and Hummon, D. M. (1993). A place to call home: Identification with dwelling, community and region. *The Sociology Quarterly*. 34, 111-131.
- Cutcliffe, J. R. and McKenna, H. P. (1999). Establishing the credibility of qualitative research findings: the plot thickens. *Journal of advanced nursing*. 30(2), 374-380.
- Daramola, S. (2006). Affordable and functional housing in a developing economy: A case study of Nigeria. *Journal of Land Use and Development Studies*. 15(2), 23-28.

- Daramola, S. A., Alagbe, O. A., Aduwo, B. and Ogbiye, S. (2005). Public-private partnership and housing delivery in Nigeria.
- Dassah, E. (2011). *An Examination of the relationship between Spatial Morphology and Residential Satisfaction in Residential Settings in Garki, Abuja.*
- Davis, H. (2000). *The culture of building.* Oxford University Press.
- Denzin, N. K. (1978 ). *The Research Act.*, (2nd ed.) New York: McGraw-Hill.
- Denzin, N. K. (1989). Interpretive interactionism. Applied social research methods series. Newbury Park: Sage.
- Denzin, N. K. and Lincoln, Y. S. (2008). *Strategies of qualitative inquiry.* (Vol. 2)Sage.
- DeVellis, R. F. (2011). *Scale development: Theory and applications.* (Vol. 26)Sage Publications.
- Diamond, L. J. (1988). *Class, ethnicity, and democracy in Nigeria: The failure of the first republic.* Syracuse University Press.
- Dincyurek, O. and Turker, O. O. (2007). Learning from traditional built environment of Cyprus: Re-interpretation of the contextual values. *Building and Environment.* 42(9), 3384-3392.
- Downe-Wamboldt, B. (1992). Content Analysis: Methods, applications and issues. *Health Care for Women International.* 13, 313-321.
- Dudley, B. J. (2013). *Parties and politics in Northern Nigeria.* Routledge.
- Ejigu, A. G. (2012). Socio-spatial tensions and interactions: An ethnography of the condominium housing o f Addis Ababa, Ethiopia. *Sustainable Cities.* 97.
- Ekholm, A. and Fridqvist, S. (2000). A concept of space for building classification, product modelling, and design. *Automation in Construction.* 9(3), 315-328.
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K. and Kyngäs, H. (2014). Qualitative Content Analysis A Focus on Trustworthiness. *SAGE Open.* 4(1), 2158244014522633.
- Elo, S. and Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing.* 62(1), 107-115.
- Eriksson, P. and Kovalainen, A. (2008). *Qualitative methods in business research.* Sage.
- Erwin, E. J., Brotherson, M. J. and Summers, J. A. (2011). Understanding Qualitative Metasynthesis Issues and Opportunities in Early Childhood Intervention Research. *Journal of Early Intervention.* 33(3), 186-200.

- Erzberger, C. and Kelle, U. (2003). Making inferences in mixed methods: The rules of integration. *Handbook of mixed methods in social and behavioral research*. 457-488.
- Fatoki, O. and Marembo, M. (2012). An investigation into the attitudes toward business ethics by university students in South Africa. *African Journal of Business Management*. 6(18), 5865-5871.
- Fellows, R. F. and Liu, A. M. (2009). *Research methods for construction*. John Wiley & Sons.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Sage.
- FMH&UD (2006). National Building Code. In Nigeria, F. R. o. (Ed.). Butterworths: LexisNexis.
- Francis, J., Giles-Corti, B., Wood, L. and Knuiman, M. (2012). Creating sense of community: The role of public space. *Journal of Environmental Psychology*. 32(4), 401-409.
- Garver, M. S. and Mentzer, J. T. (1999). Logistics research methods: employing structural equation modeling to test for construct validity. *Journal of Business Logistics*. 20, 33-58.
- Gijsberts, M. and Dagevos, J. (2007). The socio-cultural integration of ethnic minorities in the Netherlands: Identifying neighbourhood effects on multiple integration outcomes. *Housing Studies*. 22(5), 805-831.
- Glaeser, E. L. and Sacerdote, B. (2000). The Social Consequences of Housing. *Journal of Housing Economics*. 9(1-2), 1-23.
- Glaser, B. G. and Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine.
- Glaser, B. G. and Strauss, A. L. (2009). *The discovery of grounded theory: Strategies for qualitative research*. Transaction Publishers.
- Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*. 8(4), 597-607.
- Gopinath, G. and Kulkarni, S. (2014). The Impact of Socio-Cultural Factors on the Transformation of the Residential Architecture of Kerala. *International Journal of Research*. 1(5), 526-530.
- Gotham, K. F. (2003). Toward an understanding of the spatiality of urban poverty: the urban poor as spatial actors. *International Journal of Urban and Regional Research*. 27(3), 723-737.

- Greeno, J. G. (1994). Gibson's affordances. *Psychological review*. 101(2), 336-342.
- Groat, L. and Wang, D. (2002). *Architectural research methods*. Wiley.
- Guarte, J. M. and Barrios, E. B. (2006). Estimation Under Purposive Sampling. *Communication in statistics- simulation and computation*,. 35(2), 277-284.
- Guba, E. G. and Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*. 2, 163-194.
- Gyuse, T. T. (1979). Culture and housing form among the Tiv. *Savanna: A Journal of the Environmental and Social Sciences*. 8 (2), 40-55.
- Habraken, N. J. (1988). Type as a social agreement. *Proceedings of the 1988 Proceedings of the Asian Congress of Architects, Seoul*,
- Habraken, N. J. (2000). *The structure of the ordinary: form and control in the built environment*. MIT press.
- Hacihasanoglu, I. and Hacihasanoglu, O. (2006). Cultural processes and physical change in Sisli—Istanbul. *Habitat International*. 30(4), 902-915.
- Hair Jr, J. F., Anderson, R. E., Tatham, R. L. and William, C. (1995). Black (1995), *Multivariate data analysis with readings*. Prentice Hall. New Jersey, USA. pp. 14, 130-133.
- Hair Jr, J. F., William, B. C., Barry, B. J. and Rolph, A. E. (2010). *Multivariate Data Analysis*. Uppersaddle River, New Jersey: Pearson Education International
- Hamilton, D. K. (2003). The four levels of evidence based practice. *Healthcare Design*. 3(4), 18-26.
- Hanson, J. (2012). Foreword: 'The anatomy of privacy in architects' London houses'. *The Journal of Space Syntax*. 3(1), 62-68.
- Harvey, D. C. (2010). The space for culture and cognition. *Poetics*. 38(2), 185-204.
- Hidalgo, M. C. and Hernandez, B. (2001). Place attachment: Conceptual and emperical questions. *Journal of Environmental Psychology*. 21, 273-281.
- Hillier, B. (1996). *Space is the Machine*. Cambridge University Press Cambridge.
- Hillier, B. (2008). Space and spatiality: what the built environment needs from social theory. *Building Research & Information*. 36(3), 216-230.
- Hillier, B. and Hanson, J. (1984). *The social logic of space*. (Vol. 1)Cambridge university press Cambridge.
- Hillier, B., Hanson, J. and Peponis, J. (1984). What do we mean by building function?

- Hoe, S. L. (2008). Issues and procedures in adopting structural equation modeling technique. *Journal of Applied quantitative methods*. 3(1), 76-83.
- Hoelter, J. W. (1983). The analysis of covariance structures goodness-of-fit indices. *Sociological Methods & Research*. 11(3), 325-344.
- Holmes-Smith, P., Coote, L. and Cunnigham, E. (2006). *Structural Equation Modelling: From the Fundamental to Advance Topics*. Melbourne: Streams.
- Hooper, D., Coughlan, J. and Mullen, M. H. (2008. ). Structural equation modelling: guidelines for determining model fit. *Electronic Journal of Business and Research Methods*. 6(1), 53-60.
- Hornby, A. (2006). Oxford advanced learner's dictionary: International Student's Edition. Oxford: Oxford University Press.
- Hox, J. and Bechger, T. (1998). An introduction to the structural equation modeling. *Family Science Review*. 11, 354-373.
- Hsieh, H. F. and Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*. 15(9), 1277-1288.
- Hu, L. t. and Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*. 6(1), 1-55.
- Ibem, E. O. and Amole, O. (2011). Assessment of the qualitative adequacy of newly constructed public housing in Ogun State, Nigeria. *Property Management*. 29(3), 285-304.
- Ikejiofor, U. (1998). If past traditions were building blocks A perspective on low income housing development in Nigerian cities. *Building and Environment*. 34(2), 221-230.
- Ikejiofor, U. (1999). The God that Failed: A Critique of Public Housing in Nigeria, 1975–1995. *Habitat International*. 23(2), 177-188.
- Ilesanmi, A. O. (2010). Post-occupancy evaluation and residents' satisfaction with public housing in Lagos, Nigeria. *Journal of Building Appraisal*. 6 (2), 153-169.
- Isa, M. B. and Ismail, S. (2014). Cultural landscape value and spatial representation of trees in rural Nupe community of Nigeria. *Conference Proceedings: International Alliance for Sustainable Urbanization and Regeneration (IASUR 2014)*. Kashiwa Japan, 272-280.



- Jaiyeoba, B. and Aklanoglu, F. (2012). Socio-economic Issues in ‘Socially Produced’ Low Income Housing: Theory and Case study in Nigeria. *Procedia - Social and Behavioral Sciences*. 50(0), 855-864.
- Jennifer, M. (2002). Linking Qualitative and Quantitative Data analysis. In Bryman, A. & R.G.Burgess (Eds.) *Analysing Qualitative Data*. 29 West 35th Street, New York, NY 10001: Routledge; Taylor & Francis
- Jiboye, A. D. (1997). A critique of official housing policies in Nigeria. *Conference Proceedings; The House in Nigeria*. 23-24 July. Obafemi Awolowo University, Ile-Ife, Nigeria, 284-288.
- Jiboye, A. D. (2009). Evaluating Tenants' Satisfaction with Public Housing in Lagos, Nigeria. *Town Planning and Architecture*. 33 (4), 239-247.
- Jiboye, A. D. (2011). Achieving Sustainable Housing Development in Nigeria: A Critical Challenge to Governance.
- Jiboye, A. D. and Ogunshakin, L. (2010). The Place of the Family House in Contemporary Oyo Town, Nigeria. *Journal of Sustainable Development*. 3(2), P117.
- Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*. 602-611.
- Johnson, B. and Turner, L. A. (2003). Data collection strategies in mixed methods research. *Handbook of mixed methods in social and behavioral research*. 297-319.
- Jones, P. (2011). *The Sociology of Architecture: Constructing Identities*. Liverpool University Press.
- Jöreskog, K. G. (1999). How large can a standardized coefficient be. *the help-file of the LISREL program*.
- Juby, C. L. (2005). *Using A Structural Equation Model To Examine Child Maltreatment Potential Across Ecological Systems In A Population Of Families In Poverty* The university of Texas at Arlington, Arlington.
- Kallus, R. and Dychtwald, S. (2010). Effects of User-initiated Extensions in Government-built Housing on the Urban Space: The Case of the Rambam Neighbourhood in Tirat Carmel, Israel. *Journal of Urban Design*. 15(1), 69-90.

- Kaplan, R. and Kaplan, S. (1989). *The experience of nature: A psychological perspective*. CUP Archive.
- Kawu, A. M., Ahmed, A. and Usman, A. S. (2012). Learning from Tradition: Elements and Practice of Urban Development Control in Zaria, City, Nigeria. *American International Journal of Contemporary Research*. 2 (7), 205-213.
- Kawulich, B. B. (2005). Participant observation as a data collection method. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. 6(2).
- Keeves, J. P. (1988). *Educational Research Methodology and Measurement: An International Handbook*. Sydney: Pergamon Press.
- Kelloway, E. K. (1998). *Using LISREL for structural equation modelling: a researcher's guide*. Thousand Oaks: Sage Publications.
- Khan, T. H. (2008). *Living with Transformation: A Study of Self-built Houses in Dhaka*, University of Hong Kong.
- Khan, T. H. (2014a). Explicit Reasons Behind Housing Transformation *Houses in Transformation* (pp. 1-7)Springer.
- Khan, T. H. (2014b). *Living with transformation: Self-built housing in the city of Dhaka*. (Vol. 1) Cham Heidelberg New York Dordrecht London: Springer
- Kimchi, J., Polivka, B. and STEVENSON, J. S. (1991). Triangulation: operational definitions. *Nursing research*. 40(6), 364-366.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling*. Guilford press.
- Koch, D. and Steen, J. (2012). Analysis of Strongly Programmed Workplace Environments: Architectural configuration and time-space properties of hospital work. *Proceedings of the 2012 Proceedings: Eighth International Space Syntax Symposium*, 8146: 8141-8146: 8114.
- Kotharkar, R. and Deshpande, R. (2012). A Comparative Study of Transformations in Traditional House Form: The Case of Nagpur Region , India. *Journal of International Society for the study of venacular Settlements*. 2(2), 17-33.
- Kumar, R. (2010). *Research methodology: a step-by-step guide for beginners*. Sage Publications Limited.
- Lansing, J. B. and Kish, L. (1957). Family life cycle as an independent variable. *American Sociological Review*. 512-519.
- LeCompte, M. D. and Goetz, J. P. (1982). Problems of reliability and validity in ethnographic research. *Review of educational research*. 52(1), 31-60.

- Leech, N. L. and Onwuegbuzie, A. J. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly*. 22(4), 557.
- Lester, S. (1999). An introduction to phenomenological research. *Stan Lester Developments*. 1-4.
- Low, S. M. and Altman, I. (1992). Place Attachment: A conceptual inquiry. In Altman, I. & Wohlwill, O. F. (Eds.) *Place attachment* (pp. 1-12). New York: Plenum Press.
- MacCallum, R. C., Browne, M. W. and Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*. 1(2), 130.
- Mai, M. M. (2008). *Transformation of Gbagyi Housing Pattern in Peri-Urban Abuja-Nigeria, 1976-2006*, Universiti Teknologi Malaysia.
- Makachia, P. A. (2011). Evolution of urban housing strategies and dweller-initiated transformations in Nairobi. *City, Culture and Society*. 2(4), 219-234.
- Martin, C. S. and Guerin, D. A. (2006). Using research to inform design solutions. *Journal of Facilities management*. 4(3), 167-180.
- Maxwell, J. A. (1992). Understanding and validity in qualitative research. *Harvard educational review*. 62(3), 279-301.
- Maxwell, J. A. (1998). Designing a qualitative study. In Rog, I. L. B. D. J. (Ed.) *Handbook of applied social research methods* (pp. 69-100) Thousand Oaks, CA: Sage.
- Maxwell, J. A. (2012). *Qualitative Research Design: An Interactive Approach: An Interactive Approach*. Sage.
- Mberu, B. U. (2005). Who moves and who stays? Rural out-migration in Nigeria. *Journal of Population Research*. 22(2), 141-161.
- Migita, R., Yanagi, H. and Tomura, S. (2005). Factors affecting the mental health of residents in a communal-housing project for seniors in Japan. *Archives of Gerontology and Geriatrics*. 41(1), 1-14.
- Miles, M. B., Huberman, A. M. and Saldaña, J. (2013). *Qualitative data analysis: A methods sourcebook*. SAGE Publications, Incorporated.
- Mirkin, B. (1987). Additive clustering and qualitative factor analysis methods for similarity matrices. *Journal of Classification*. 4(1), 7-31.

- Mirmoghtadaee, M. (2009). Process of Housing Transformation in Iran. *Journal of Construction in Developing Countries*. 14(1), 69-80.
- Mohit, M. A. and Azim, M. (2012). Assessment of Residential Satisfaction with Public Housing in Hulhumale', Maldives. *Procedia - Social and Behavioral Sciences*. 50(0), 756-770.
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*. 1(1), 48-76.
- Morris, E. W. and Winter, M. (1975). A theory of family housing adjustment. *Journal of Marriage and the Family*. 79-88.
- Mosha, L. H. (2011). Imposition of architectural and spatial planning concepts into local dwelling culture. *Journal of Business administration and Management* 2(6), 596-603.
- Muoghalu, L. N. (1984). Subjective indices of housing satisfaction as social indicators for planning public housing in Nigeria. *Social indicators research*. 15 (2), 145-164.
- Muoghalu, L. N. (1987), *The Urban Poor and Accessibility to Public Housing in Nigeria*. In Makinwa and Ozo. *Poverty in Nigeria, A Multi-dimensional perspective. The Urban Poor in Nigeria*. (161-171). Ibadan, Nigeria: Evans Brothers Ltd.
- Mustafa, F. A. (2010). Using space syntax analysis in detecting privacy: a comparative study of traditional and modern house layouts in Erbil city, Iraq. *Asian Social Science*. 6(8), P157.
- Mustapha, A. R. (2004). *Ethnic structure, inequality and governance of the public sector in Nigeria*. United Nations Research Institute for Social Development.
- Mustapha, A. R. (2006). *Ethnic structure, inequality and governance of the public sector in Nigeria*. United Nations Research Institute for Social Development.
- Musterd, S. (2003). Segregation and integration: a contested relationship. *Journal of ethnic and migration studies*. 29(4), 623-641.
- Nguluma, H. (2003). Housing themselves: Transformations, modernisation and spatial qualities in informal settlements in Dar es Salaam, Tanzania.
- Nunnally, J. C., Bernstein, I. H. and Berge, J. M. t. (1967). *Psychometric theory*. (Vol. 226)McGraw-Hill New York.

- Nwanodi, O. (1989). Hausa compounds: products of cultural, economic, social and political systems. *Habitat International*. 13(4), 83-97.
- Oakley, D., Wilson, G. E. and Maddox, R. (2010). Is public housing the cause of poor health or a safety net for the unhealthy poor? *Journal of Urban Health*. 87(5), 827-838.
- Odebiyi, O. (2010). Sustainable Housing Development in Africa: Nigerian Perspective. *International Business and Management*. 1(1), 22-30.
- Ogu, V. I. (1998). The dynamics of informal housing in a traditional West African city: the Benin City example. *Third World Planning Review*. 20(4), 419.
- Ogu, V. I. and Ogbuozobe, J. E. (2001). Housing policy in Nigeria: towards enablement of private housing development. *Habitat International*. 25(4), 473-492.
- Oladapo, A. A. (2006). A study of tenants' maintenance awareness, responsibility and satisfaction in institutional housing in Nigeria. *International Journal of Strategic Property Management*. 10(4), 217-231.
- Olayiwola, L., Adeleye, O., Ogunshakin, L. and Ogunsakin, L. (2005). Public housing delivery in Nigeria: problems and challenges.
- Oliver, M. (1992). Changing the social relations of research production? *Disability, Handicap & Society*. 7(2), 101-114.
- Oliver, M. (1997). Emancipatory research: realistic goal or impossible dream. *Doing disability research*. 2, 15-31.
- Oliver, P. (2006). *Built to meet needs: Cultural issues in vernacular architecture*. Architectural Press.
- Olowoyo, S. A. and Khan, T. H. (2012). Effect of culture on Urban Housing Non-Occupancy: A case Study in Ondo, Nigeria. *British Journal of Humanities and Social Sciences*. 7(2), 50-63.
- Olotuah, A. O. and Fasakin, J. O. (2003). Housing requirement of low-income civil servants in Ado-Ekiti: A critico-empirical investigation. *Journal of Urban and Environmental Research*. 3 (1), 55-59.
- Omeife, C. A. and Windapo, A. O. (2013). Impact of the National Building Code on Professionalism *Proceedings of the 43rd Builders Conference/AGM*. International Conference centre, Abuja.

- Onwuegbuzie, A. J., Leech, N. L. and Collins, K. M. (2012). Qualitative Analysis Techniques for the Review of the Literature *The Qualitative Report* (Vol. 17, pp. 1-28).
- Opoku, R. A. and Abdul-Muhmin, A. G. (2010). Housing preferences and attribute importance among low-income consumers in Saudi Arabia. *Habitat International*. 34(2), 219-227.
- Pallant, J. (2005). *SPSS Survival Manual: A step by step Guide to Data analysis using SPSS for windows (version 12)*. Berkshitre: Open University Press.
- Patton, M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health services research*. 34(5 Pt 2), 1189.
- Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. (3rd ed.) Thousand Oaks, California 91320: Sage Publications, Inc.
- Patton, M. Q. (2005). *Qualitative research*. Wiley Online Library.
- Paul, M. and Carroll, G.-S. (2003). Synthesizing Indegenous Housing Paradigms: An Introduction to TAKE 2. In Paul, M. & Catherine, C. (Eds.), *TAKE 2 Housing Design in Indigenous Australia*. Red, Hill Australia: The Royal Australian Instituite of Architects.
- Pearce, P. L. (1988). *The Ulysses Factor: Evaluating Visitors in Tourist Settings*. New York: Springer Verlag.
- Pearce, P. L., Moscardo, G. and Ross, G. F. (1996). *Tourism Community Relationships*. Oxford: Pergamon.
- Pedhazur, E. J. and Schmelkin, L. P. (2013). *Measurement, design, and analysis: An integrated approach*. Psychology Press.
- Polit, D. F. and Beck, C. T. (2012). *Nursing Research: Principles and Methods*. Philadelphia, PA: Lippincott Williams and Wilkins.
- Popkin, S. J., Cunningham, M. K. and Burt, M. (2005). Public housing transformation and the hard-to-house. *Housing Policy Debate*. 16(1), 1-24.
- Porter, R. (2009). *Towards a Hybrid Model of Public Housing in Northern Territory Remote Aboriginal Communities?* Desert Knowledge CRC.
- Potts, D. (2012a). Challenging the myths of urban dynamics in sub-Saharan Africa: The evidence from Nigeria. *World development*.
- Profile, C. (2012). Nigeria, July 2008. *Proceedings of the 2012 Library of Congress–Federal Research Division*. ,

- Pugesek, B. H., Tomer, A. and Eye, A. (2003). *Structural equation modeling: applications in ecological and evolutionary biology*. Cambridge Univ Pr.
- Purcell, A. T. (1987). The relationship between buildings and behaviour. *Building and Environment*. 22(3), 215-232.
- Rapoport, A. (1969). *House form and culture*. Englewood cliffs: Prentice-hall.
- Rapoport, A. (1983). Development, culture change and supportive design. *Habitat International*. 7(5), 249-268.
- Rapoport, A. (1998). Using 'culture' in housing design. *Housing and Society*. 25(1/2), 1-20.
- Rapoport, A. (2000). Theory, culture and housing. *Housing, theory and society*. 17(4), 145-165.
- Rapoport, A., Altman, I. and Wohlwill, J. F. (1980). *Environment and culture*. (Vol. 4)Springer.
- Rašula, J., Bosilj Vukšić, V. and Indihar Štemberger, M. (2012). The impact of knowledge management on organisational performance. *Economic and Business Review*. 14(2), 147-168.
- Rikko, L. and Gwatau, D. (2011). The Nigerian architecture: The trend in housing development. *Journal of Geography and Regional Planning*. 4(5), 273-278.
- Robert, G. B., Christopher, J. P., Keith, E. and Christine, P. (2002). Four studies from one or one study from four? Multi-site case study research. In Alan, B. & Robert, G. B. (Eds.) *Analysisng Qualitative Data*. 29 West 35th Street, New York, NY 10001: Routledge; Taylor & Francis
- Robinson, J. W. (2001). Institutional space, domestic space, and power relations: Revisiting territoriality with space syntax. *Proceedings of the third International Space Syntax Symposium*.
- Ronald, R. (2011). Ethnography and comparative housing research. *International Journal of Housing Policy*. 11(4), 415-437.
- Saa'd, H. (1981) *Between Myth & Reality: The Aesthetics Of Architecture in Hausa land* PhD Dissertation University of Michigan Ann Arbor.
- Sahin, E., Çakmak, M., Dogar, M. R., Ugur, E. and Ucoluk, G. (2007). To afford or not to afford: A new formalization of affordances toward affordance-based robot control. *Adaptive Behavior*. 15(4), 447-472.

- Sailer, K., Budgen, A., Lonsdale, N., Turner, A. and Penn, A. (2009). Evidence-based design: theoretical and practical reflections of an emerging approach in office architecture.
- Salama, A. (2006). A life style theories approach for affordable housing research in Saudi Arabia. *Emirates Journal for Engineering Research, College of Environmental Design*. 11(1), 67-76.
- Salau, A. T. (1992), *Urbanisation, housing and social services in Nigeria: The challenge of meeting basic needs*. In Potter and Salau. *Cities and Development in the third world* (51-69) London: Mansell Publishing.
- Sarros, J. C., Gray, J., Densten, I. L. and Cooper, B. (2005). The organizational culture profile revisited and revised: an Australian perspective. *Australian Journal of Management*. 30(1), 159-182.
- Schlyter, A. and Schlyter, T. (1979), *Goerge- The development of Squatter Settlements in Lusaka, Zambia*. . In Swedish Council for Building Research, Lund:
- Schoenauer, N. (2003). *6,000 years of housing*. WW Norton & Company Incorporated.
- Schreier, M. (2012). *Qualitative content analysis in practice*. Thousand Oaks: CA:Sage.
- Schwerdtfeger, F. W (1971), *Housing in Zaria*. In Oliver. *Shelter in Africa*. (39-47). New York: L Praeger.
- Schwerdtfeger, F. W. (1982). *A Comparative Study of Housing in Zaria, Ibadan and Marakech: Traditional Housing in African Cities*. John Wiley & Sons.
- Seek, N. (1983). Adjusting housing consumption: improve or move. *Urban Studies*. 20(4), 455-469.
- Seun, O. (2012). Behavioral Outcomes of Culture and Socio-economic Status on Urban Residential Morphology: A case study of Lagos. *Procedia- Social and Behavioural Sciences*. 50 (2012), 294-306.
- Sim, L. L., Yu, S. M. and Han, S. S. (2003). Public housing and ethnic integration in Singapore. *Habitat International*. 27(2), 293-307.
- Sivo, S. A., Fan, X., Witta, E. L. and Willse, J. T. (2006). The search for " optimal" cutoff properties: Fit index criteria in structural equation modeling. *The Journal of Experimental Education*. 74(3), 267-288.



- Sofield, T. H. B. (2010). The Presentation and Imagery of Indigenous and Ethnic Minorities for Tourism through Touristic Media *International Austronesian Conference*. Taipei, Taiwan.
- Spradley, J. P. (1979). *The ethnographic interview*. Holt, Rinehart and Winston New York.
- Stake, R. E. (2010). *Qualitative research: Studying how things work*. Guilford Press.
- Stapleton, C. D. (1997). Basic Concepts and Procedures of Confirmatory Factor Analysis.
- Starks, H. and Trinidad, S. B. (2007). Choose your method: A comparison of phenomenology, discourse analysis, and grounded theory. *Qualitative health research*. 17(10), 1372-1380.
- Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*. 42(5), 893-898.
- Steiger, J. H. and Lind, J. C. (1980). Statistically based tests for the number of common factors. *Proceedings of the 1980 annual meeting of the Psychometric Society, Iowa City, IA*,
- Stevens, J. P. (2012). *Applied multivariate statistics for the social sciences*. Routledge.
- Sueca, N. P. (2004). Transformasi Rumah: Prospeknya Untuk Memperbaiki Keadaan Rumah di Indonesia. *Jurnal Permukiman Natak*. 2(1), 1-55.
- Sulaiman, H. and Yahaya, N. (1987). Housing provision and satisfaction of low-income households in Kuala Lumpur. *Habitat International*. 11(4), 27-38.
- Tacoli, C. (1998). Rural-urban Interactions; a Guide to the Literature. *Environment and Urbanization*. 10, 147-166.
- Tan, W. C. K. (2004). *Practical research methods*. (Vol. Volume 2) Singapore: Prentice Hall.
- Taiwo, A. (2015). The need for government to embrace public-private partnership initiative in housing delivery to low-income public servants in Nigeria. *URBAN DESIGN International*. 2015 (20), 56-65.
- Taylor-Powell, E. and Steele, S. (1996). Collecting evaluation data: An overview of sources and methods. *University of Wisconsin Cooperative Extension Service*. Cir. G3658-4.

- Teddlie, C. (2005). Methodological Issues Related to Causal Studies of Leadership A Mixed Methods Perspective from the USA. *Educational Management Administration & Leadership*. 33(2), 211-227.
- Teddlie, C. and Yu, F. (2007). Mixed Methods Sampling A Typology With Examples. *Journal of mixed methods research*. 1(1), 77-100.
- Thorne, S. (1997). The art (and science) of critiquing qualitative research. In Morse, I. J. M. (Ed.) *Completing a qualitative project: Details and dialogue* (pp. 117-132). Thousand Oaks, CA: Sage.
- Thouless, R. H. (1953). *Straight and Crooked Thinking*. S Head/art Place, London, S.W.I: Pan Books Ltd.
- Tipple, A. G. (1996). Housing extensions as sustainable development. *Habitat International*. 20(3), 367-376.
- Tipple, A. G., Owusu, S. E. and Pritchard, C. (2004). User-initiated extensions in government-built estates in Ghana and Zimbabwe: Unconventional but effective housing supply. *Africa Today*. 51(2), 79-105.
- Tipple, A. G. and Salim, A. (1999). User-initiated extensions as housing supply: a study of government-built housing estates in Malaysia. *Third World Planning Review*. 21(2), 119.
- Tipple, G. (2000). *Extending Themselves: User Initiated Transformations of Government-built Housing in Developing Countries*. Liverpool University Press.
- Udin, A. B. (2011). *A study to investigate the relationships of ergonomics risk factors, health symptoms and job strain in high skilled training institutes*. Phd thesis, Universiti Teknologi Malaysia.
- Ukoha, O. M. and Beamish, J. O. (1996). Predictors of housing satisfaction in Abuja, Nigeria. *Housing and Society*. 23 (3), 26-46.
- Ukoha, O. M. and Beamish, J. O. (1997). Assessment of residents' satisfaction with public housing in Abuja, Nigeria. *Habitat International*. 21(4), 445-460.
- UN (2013). *Science, technology and innovation for sustainable cities and peri-urban communities*. [Report]. Economic and Social Council; Commission on Science and Technology for Development (UN):
- Vagg, P. R. and Spielberger, C. D. (1999). The Job Stress Survey: assessing perceived severity and frequency of occurrence of generic sources of stress in the workplace.

- Vischer, J. C. (2008). Towards a user-centred theory of the built environment. *Building Research & Information*. 36(3), 231-240.
- Vischer, J. C. and Zeisel, J. (2008). Bridging the gap between research and design. *WORLD HEALTH*. 57.
- Walsh, D. and Downe, S. (2005). Meta-synthesis method for qualitative research: a literature review. *Journal of advanced nursing*. 50(2), 204-211.
- Weber, R. P. (1990). *Basic content analysis*. Sage.
- Wheaton, B. (1987). Assessment of fit in overidentified models with latent variables. *Sociological Methods & Research*. 16(1), 118-154.
- Whittemore, R., Chase, S. K. and Mandle, C. L. (2001). Validity in qualitative research. *Qualitative health research*. 11(4), 522-537.
- Wikberg, F. and Ekholm, A. (2009). Architectural objects and systems building. *Submitted to CAADfutures*. 9.
- Willig, C. (2001). *Introducing qualitative research in psychology Adventures in theory and method*. Buckingham, 325 Chestnut Street Philadelphia, PA 19106, USA: Open University Press.
- Willig, C. (2013). *Introducing qualitative research in psychology*. McGraw-Hill International.
- Wong, J. F. (2010). Factors affecting open building implementation in high density mass housing design in Hong Kong. *Habitat International*. 34(2), 174-182.
- Woods, P. (2006). *Successful writing for qualitative researchers*. Psychology Press.
- Woodside, A. G. (2010). *Case Study Research: Theory, Methods and Practice: Theory, Methods, Practice*. Emerald Group Publishing.
- Yakubu, O. A. and Windapo, A. O. (2001). Planning/Building Regulations and Implementation by Contractors in Nigeria. *The Professional Builder Journal*. 15-21.
- Yin, R. K. (2010). *Qualitative research from start to finish*. Guilford Press.
- Yin, R. K. (2014). *Case study research: Design and methods*. Sage publications.
- Zainudin, H. A. (2012). *A Handbook on Structural Equation Modelling*. (4 ed.) University Teknologi Mara, Kelantan, Malaysia: Centre for Graduate Studies (CGS).

- Zhang, L., Zhao, S. X. and Tian, J. (2003). Self-help in housing and chengzhongcun in China's urbanization. *International Journal of Urban and Regional Research*. 27(4), 912-937.
- Zhang, Y. and Wildemuth, B. M. (2009). Qualitative analysis of content. *Applications of social research methods to questions in information and library science*. 308-319.
- Zinas, B. Z. and Jusan, M. B. M. (2012). Housing Choice and Preference: Theory and Measurement. *Procedia - Social and Behavioral Sciences*. 49(0), 282-292.