

Housing Flexibility in Abuja Federal Capital Territory: Feedback for Policy and Practice

*UNAH, M. O. ¹, IBRAHIM, Y. B. ² and MAKERA, I. U. ³

^{1,2} Department of Architecture, Faculty of Earth and Environmental Sciences, Bayero University Kano

³ Department of Architecture, Waziri Umaru Federal Polytechnic Birini Kebbi

*Corresponding author: unahkay@yahoo.com

Abstract

Housing flexibility and its determinant used of space transformation in domestic household has been on the rise in residential housing, and the Apo scheme resettlement scheme of the Federal Capital Development Authority (FCDA) Abuja is used as an empirical study. The possibility of using the external space of this dwelling configuration in multiple ways are determined by the flexible nature of the various prototypes. The modification and adoption to sustainable changing requirements of this functional housing are more present lately, as most occupants have taken the advantage in proving multiple design dwelling. The aim of this research is to appraise the validity of housing flexibility by determinacy as an architectural response to social-economic changes in housing need in Abuja. The core of this study uses both qualitative and quantitative techniques of data analysis, and were presented using the relevant descriptive and inferential statistical techniques. The study finds out that most of the occupants expressed satisfaction with the flexibility nature of the houses by providing more living spaces either by connecting with more interior dwelling units or by means of attaching extra residences (family) units. It recommends with a view to its introduction in future housing developments policy has been carried by Government in recent time.

Keywords: Apo-Abuja, Housing flexibility; Resettlement scheme; Transformation; Spatial Determinacy.

Introduction

The establishment of Federal Capital Territory (FCT), Abuja in 1976 enacted the Federal Capital Development Authority (FCDA) with the responsibility of planning, developing the city with its infrastructures, and subsequently managing its growth (International Planning Associates IPA, 1979). This development brought about the displacement of indigenous aborigine inhabitant and resettlement housing schemes. The government of Mallam Nasir Ahmed El Rufai as the minister of Federal Capital Territory (FCT) in 2005 commenced the construction of resettlement houses, with Apo being a pilot project. The delivery of large scale proto-type core housing scheme in the Federal Capitals City and its satellite towns have been existing government policies and practices that had

supported the public housing approach in housing delivery system in the FCT. FCDA in its technical known –how has designed and supervised this housing prototypes with it intending flexible for change, which allows the occupant / residents carry out transformation of their dwelling units.

Although, this residential building lacked adequate use of spaces to accommodate large family, but has the predetermine function of spatial determinacy configuration flexibility of defining the use of the domestic spaces to cater for features and the growing variety of user needs. Schneider and Till (2007) as cited in Agatangelo (2015) posit “flexible housing as housing that can adjust to changing needs and patterns, both social and technological”. This changing needs can be personal,

practical or technological, and the changing patterns may be demographic, economic or environmental. This needs according to Tipple et al. (2004) changes as result of housing transformation carried out in the form of alterations, extension, modification, or addition to the original forms, extent and patterns of their buildings including their immediate environment carried out by the residents after allotment. Adegbehingbe (2012) opined transformation of houses as a common determinant in government housing estates across Nigeria, which posit Apo resettlement housing scheme as one of such case to deal with.

Aduwo and Ibem (2017) posit housing flexibility as the transform-ability of housing that involved physical and spatial alteration or addition, modification or extension of any part of existing residential building or its immediate surroundings by the residents. The constant modification of this resettlement housing scheme (Unah, 2022). Amongst other needs has contributed to the deserved changed in housing skyline with it rapid expansion which has continue to increase social needs and density of the built environment (Unah, 2019). It can take the forms of materials or space alteration/addition or both. This definition is used in this study as opt by Groák (1992) that define housing flexibility by modifying the physical form of the building; by joining, splitting, extending, and merging spaces. Therefore, the biggest challenge in the built environment today is the rapidly changing needs and requirements carried out on buildings as a flexible structure and spatial configuration to be able to meet rapidly changing demands (Estaji, 2017).

It was on this premise that this study is set to fill the gap that currently exists in housing literature by appraised housing flexibility in Apo resettlement scheme Abuja. The specific objectives of the study were to: (a) examine each housing floor plan topology as modified by the users, (b) Identify the type of transformation carried out in the different zones of the layout and what type of building Structures where transformed.

Literature Review

Housing flexibility usually occurs in buildings in used whose spatial configuration has been studies in the past. Nguluma (2003), posit housing flexibility as the transformation of houses basically to address the changes and embrace the variables of physical alterations, extension and possibly renewal of part or whole of buildings. However, Unah (2022) study aver evidence on the housing-related changed attributes preferred by the homeowner's modification and the needed housing transformation taking place has been envisaging by the Federal Capital Development Authority (FCDA) and this development has harness and improved the quality of life for the residents of the area. The concept of flexibility in the context of architectural housing is introduced under two topics: this as posited by Schneider & Till, (2007) "evolving conditions of the vernacular" and the "external pressures that have prompted housing designers and providers to develop alternative design solutions, including flexible housing". Hill (2003) opined that flexibility has many meaning nuances, but that it originally refers to the accommodation of changing relationships between events, contexts, and the use of space, while (Albostan, 2009) claimed that flexibility either evolves and improves from the experience of traditional tendencies in housing design or appears as a new design tendency which follows the outward forces of the twentieth century.

Housing flexibility is identified as a planning choice in the design phase of domestic architecture; either both in terms of construction and social use, or designed for change over its lifetime. Flexibility as widely accepted in today's social housing is an issue that has been considered on different levels to be a solution to housing needs (Seyed et al., 2015). Although, throughout eastern architecture, the designing of flexible floor plans has been experimented since 1920, particularly the Netherlands which has a long and ongoing tradition to which great architects such as Rietveld, Stam, Van Doesburg, Van den Broek, Van Tijen, Habraken, Hertzberger

and Van Eyck made their innovative contributions (Seyed et al., 2015). Arjmandi, Tahir, Che-Ani, Abdullah, & Usman (2010) posit flexibility as a feature of creating different types of space for different functions; which implies that these houses intend to fulfil inhabitants' requirements in accordance with their lifestyle that increases their general satisfaction (Zandiyeh, Mehdi; Eghbali, Seyed rahman; Hesari, 2012).

Housing flexibility is a dwelling layout configuration that offers the in-built opportunity for adaptability that required changing patterns, both socially and technically. Aduwo and Ibem (2017), Aduwo, Ibem, and Opoko (2013) opt the adjustments may take different forms such as revision of housing needs and aspirations or improvement of housing conditions into conformity with users' aspirations or needs and adaptation. These changing demands may be technological (e.g. the updating of old services), practical (e.g. the onset of old age) or personal (e.g. an expanding family). The changing patterns might be demographic, environmental or economic ones. Hence, flexible housing undertakes all of the housing development process enabling different physical arrangements. Schneider & Till (2005) opted that the incorporation of flexibility into housing design allows architects the illusion of designing their control over the building in the future, beyond the period of their actual responsibility for it flexibility in domestic architecture allows its' inhabitants to take part in the design process of the different possibilities of using their living space. Flexibility, as a helpful and effective method, has been utilized in different architecture spaces to reach functional efficiency. It has a comprehensive function in architecture that can be defined by open plans and sections, and by portable and changeable elements. Flexibility as an initial solution, in today's modern social housing, is a subject that has been employed in different levels throughout different time periods. The Dutch architect Hertzberger (1991) posit that when flexibility became

the catchword, it was the panacea to cure all of the illnesses of architecture.

Material and Methods

Abuja the Nigeria's Federal Capital Territory (FCT) is located in the middle of the country with a land area of about 8,000 km² of which the actual city (i.e. Municipal) occupies 250sq km. The federal capital territory is bounded on the North by Kaduna state, on the West by Niger state on the East and South-east by plateau state, and on the south-west by Kogi state. It lies within latitude 90 25'N and 90 20'N of the equator and longitude 50 45'E and 70 39'E [16]. It was created in Abuja on 3rd Feb.1976 through the promulgated Federal Capital Territory decree no. 6, 1976 mainly due to the growing unsuitability of Lagos as Nigeria's Federal Capital City as result of the problem of peripheral location, dual and conflicting role as both federal and state capital, acute shortage of land space for expansion, and inadequacies for infrastructural development among other reasons since the late 1960's. This paper covers Apo resettlement scheme as a housing dwelling in Abuja, which comprises of five (5) zones, A, B, C, D and E (figure 2). This 5 zone entirely make up the total 876 housing units situated on the 400 hectares (Table 1). The resettlement scheme accommodates 877 units of residential houses (FCDA, 2017). This comprises 384 units of one-bedroom bungalow apartments, 398 units of two-bedroom bungalow apartments, 90 units of three and 4 units of four bedroom detached bungalows for the resettlement of three communities that were displaced.

The study uses both qualitative and quantitative techniques, where data were sourced using well-structured questionnaire, observation schedule walk-through and sketching of the floor plan of the buildings. A total of 250 questionnaires representing about 28.51% of the total number of 876 housing units in the resettlement scheme were administered to respondents from each of the 5 zones. A total of 186 questionnaires (74.40%) were retrieved and used as valid response. Likert scale was used to rate

residents' perception on a four-point scale, adequately provided=4, provided=3, fairly provided=2 and not provided=1. Each response was coded as follow: Not significant = 1, Less significant = 2, and = 3 and Most significant =4 are scale used to determine *degree of significant impact* of respondents with building transformation (see Table 3). Data were presented using the relevant descriptive and inferential statistical techniques. The sum of Weight Mean, Standard Deviation and Relatively Important Index (R.I.I) were analysis and ranked accordingly. Thus: Relative Importance Index (R. I. I.) = $(3n_3+2n_2+1n_1)/3N$.

Each coded response was multiplied by number of respondents, which gave the Weighted Value (WV). The Summation of the Weighted Values (ΣWV) was divided by number of respondents (n) to arrive at each component Mean Weighted Value (MWV). The Summation of the Weighted Values (ΣWV) was divided by number of respondents (n) to arrive at each component Mean Weighted Value (MWV). The Mean of Mean Weighted Value (MWV) was then obtained by dividing Summation of Mean

Weighted Value (ΣMWV) by total number of infrastructure or building elements (y) surveyed in the study. This gave the overall conditions. Thus, $MWV = \Sigma WV/n$, where n = population of respondents. Overall condition = Mean of MWV = $\Sigma MWV/y$, y = total number of variables.

Table 1: show the housing scheme resettlement of three communities; Apo, Akpanjanya and Garki. The villagers were allocated their residential plots as distributed Garki Gbagyi (780), Gbagyi Hausa (450), and Apo (39) while Akpanjanya (201) plots respectively. The distribution of houses allocation also shows in Table 1: indicates that Garki Gbagyi (181), Gbagyi Hausa (102) Apo (21) while Akpanjanya (80) units of one (1) bedroom bungalow respectively. The same applied to two bedroom bungalows: Garki Gbagyi (226), Gbagyi Hausa (123), Apo (10) while Akpanjanya (40) units respectively. Three bedroom is evidences in same sequenc: Garki Gbagyi (48), Gbagyi Hausa (30) Apo (2) while Akpanjanya (90) units respectively.

Table 1: Houses Allocation at Apo Resettlement.

S/NO	Village Allocation Name	No of Plot	Houses Allocation					Total				
			1 Bedroom	2 Bdrm.	3 Bdrm.	4 Bdrm.						
1	Garki Village	780	181	226	48	1	456					
	Gbagyi Hausa		456	1236	102	283	123	349	30	78	1	2
2	Apo	39	21	10	2	1	34					
3	Akpanjanya	201	80	40	10	1	131					
4	Total	1,476	384	399	90	4	877					

Source: Dept. of resettlement and Compensation (FCDA, 2017)

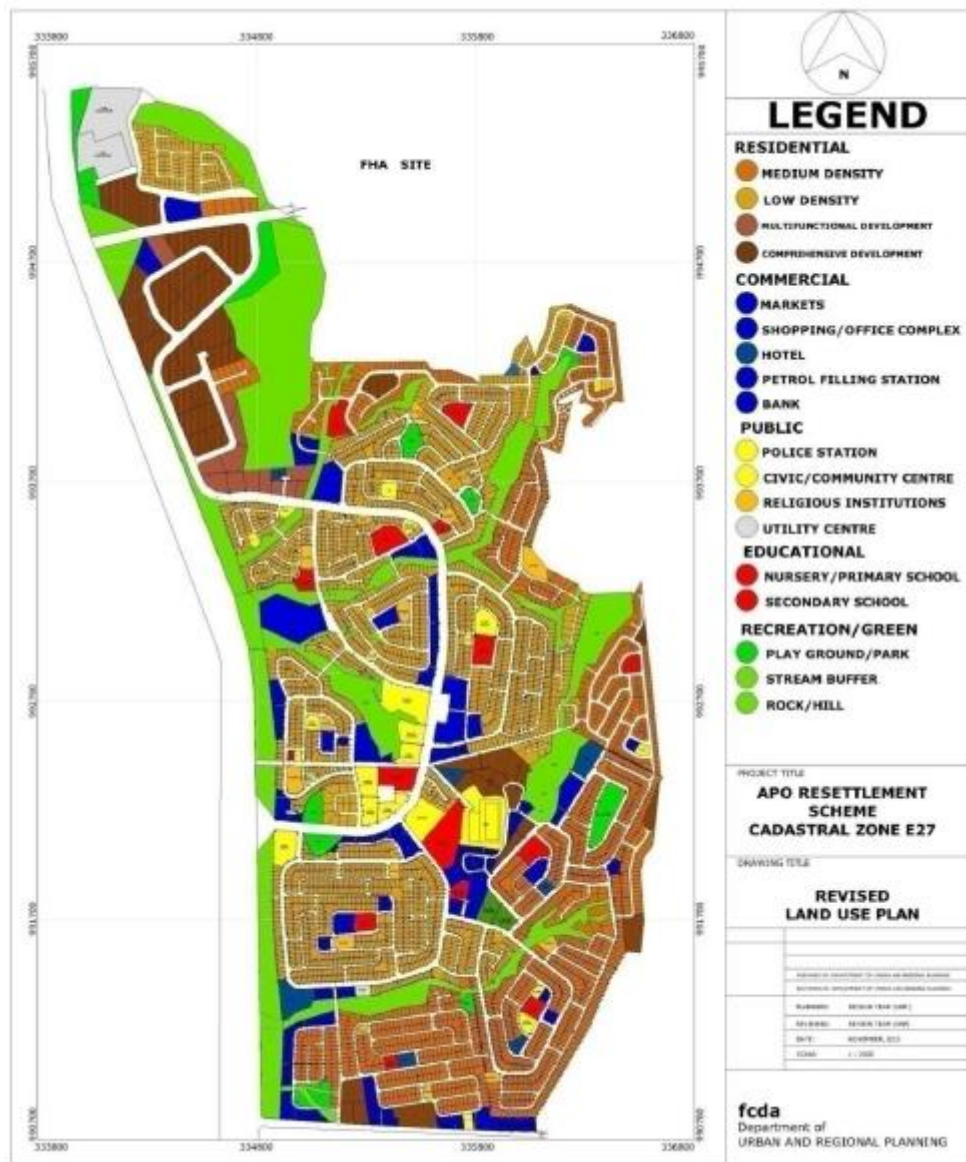


Figure 2: The Landuse plan of Apo resettlement scheme
 Source: Urban and Regional Planning Department FCDA, Abuja (2017).

Table 2: Characteristics of the respondents who participated in the survey

Village Allocation Name	Zone	Roof identification colour	Questionnaires distributed	Questionnaires Retrieved (%)	Housing Topologies					
					1 Bedroom		2 Bedroom		3 Bedroom	
					questionnaire giving collect	questionnaire giving collect	questionnaire giving collect	questionnaire giving collect	questionnaire giving collect	questionnaire giving collect
Garki Gbagyi	A	Green roof	70	47 (67.14)	25	20	30	25	15	12
	B	Average beige	70	58 (82.86)	25	21	30	27	15	10
Gbagyi Hausa	C	Blue	53	35 (66.04)	20	15	18	10	15	10
Apo	D	Green	22	14 (63.63)	10	7	10	5	2	2
Akpanjany	E	Average beige	35	22 (62.86)	15	12	15	8	5	2
Total			250	186	95	75	103	75	52	36

Source: author field research 2019

NOTES: One Bedroom total questionnaires giving=95, Two Bedroom total questionnaires giving=103 3 Bedroom total questionnaires giving=52 (Total=250).

One Bedroom total questionnaires collect=75, Two Bedroom total questionnaires collect=75, Three Bedroom total questionnaires collect=36 (Total=186)

Study Findings

Adequate knowledge of the methods adopted by the resident to effect transformation is important in improving understanding of process involved in the alteration of the physical and spatial attributes of the housing adaptability investigated. Result in Table 2 shows the characteristics of the respondents who participated in the survey. The spatial distribution of the population occupying the resettlement scheme are analysis thus: Garki Gbagyi indigenes occupied Zone –A and B, which from the site inventory are provided with Green and average beige Aluminum Roof Covering sheet., Garki Hausa indigene occupied Zone –C, with Blue Aluminum Roofing sheet, Apo indigenes occupied zone D, with Green Roof while the indigene of Akpanjany were settled at Zone E with Average beige roof identification. It is evident from this result that (186) representing around 74.40% of the respondents in the survey whose questionnaires were retrieve/collected and

used for data analysis, while 64 respondents which is about 25.60% of them were not retrieved.

Discussion

Table 3A: the analysis of building structure transformation in core Garki Gbagyi Zone A and B of the resettlement housing, which involved in the alteration if the physical and spatial attributes of the housing determinacy. This was revealed in their order relative importance index as well as being interpreted according to Table 2: Guide to degree of significant impact of variable with most and less transformation. Table 3A,3B and 3C presented the respondents mean score for each variable was calculated as shown in table 3A and they decision on the variable was based on the range of score stated in the interpretation of the Likert scale of four (4). The variables were then ranked between 1st and 12th as shown in table 3A, 3B and 3c respectively.

Table 3: Guide to degree of interpretation

Degree of Significant Impact	Rating using Summation of Mean Weighted Value (ΣMWV)	Interpretation
Most significant	0.80-0.89	High present
significant	0.60-0.79	present
Less significant	0.40-0.59	less present

Source: Fieldwork survey, 2019.

Table 3.a: Building Structures Transformation

Adaptable Flexibility		GARKI GBAGYI									
Variable 1: Building Structure Transformation		Rating and Weighted Values				SWV	MWV	Std. D.	R.I.I	Rank	
		N	HPI (x1)	PI (x2)	MI (x3)	NI (x4)					
1	Extra one bedroom unit attachment	186	22	27	45	92	579	3.112	0.0167	0.778	2 ND
2	Modification of living room interior space	186	54	42	38	52	460	2.473	0.0132	0.618	8 TH
3	Semi-detached self-contained	186	15	25	48	101	613	3.295	0.0177	0.823	1 ST
4	Introduction of dining space interior	186	39	54	61	32	458	2.462	0.0132	0.615	9 TH
5	Semi-detached two-bedroom bungalow	186	52	85	27	12	461	2.478	0.0133	0.619	7 TH
6	Extra one bdrm. interior introduction	186	40	38	62	46	486	2.612	0.0140	0.653	4 TH
7	Modification of building facades	186	20	84	40	42	476	2.559	0.0137	0.637	5 TH
8	Attached one-bedroom bungalow	186	20	69	45	52	501	2.693	0.0144	0.673	3 RD
9	Attached two bedroom unit attachment	186	32	61	56	37	470	2.526	0.0135	0.631	6 TH
10	Extra two bdrm. Interior introduction	186	35	67	54	30	451	2.424	0.0130	0.606	10 TH
11	Modification of building entrances porch	186	61	65	35	25	396	2.129	0.0114	0.532	11 TH
12	Modification of Roof	186	70	81	25	4	347	1.865	0.0100	0.466	12 TH

SOURCE: Author field Research 2019

Table 3A, reveals that Semi-detached self-contained was indicated as the most impact of adaptable housing flexibility being transformed on the study area with (MWV= 3.295) and ranked 1st (R. I. I. = 0.823) has degree of significant impact as “High Present”. Extra one bedroom unit attachment (MWV=3.112) rank 2nd (R.I. I=0.778) Attached one-bedroom bungalow (MWV= 2.693) and ranked 3rd (R. I. I. = 0.673), and while Extra one bdrm. interior introduction (MWV= 2.612) and ranked 4th (R. I. I. = 0.653) and Modification of building facades (MWV= 2.559) and ranked 5th (R. I. I. = 0.637), Attached two bedroom unit attachment (MWV= 2.526) rank 6th (R.I. I=0.631), Semi-detached two-bedroom bungalow (MWV= 2.559) and ranked 7th (R. I. I. = 0.619), Modification of living room interior space (MWV=2.473) rank 8th (R.I. I=0.618), Introduction of dining space interior (MWV= 2.462) and ranked 9th (R. I. I. = 0.615), Extra two bdrm. Interior introduction (MWV=2.424) rank 10th (R.I. I=0.606), has degree of significant impact as

“Present”. Modification of building entrances porch (MWV= 2.129) rank 11th (R.I. I=0.532) and Modification of Roof (MWV= 1.865) and ranked 12th (R. I. I. = 0.466) has “less present” significant impact respectively.

Table 3B, indicated the most impact of adaptable housing flexibility being transformed on the study area with Modification of living room interior space (MWV= 3.322) and ranked 1st (R. I. I. = 0.830) Semi-detached two-bedroom bungalow (MWV=3.279) rank 2nd (R.I.I=0.819) has degree of significant impact as “high Present”. Extra one bedroom unit attachment (MWV= 3.107) and ranked 3rd (R. I. I. = 0.776), Introduction of dining space interior (MWV= 3.016) and ranked 4th (R. I. I. = 0.754) Semi-detached self-contained (MWV= 2.897) and ranked 5th (R. I. I. =0.724), Extra two bdrm. Interior introduction (MWV= 2.860) rank 6th (R.I. I=0.715), Modification of building facades (MWV= 2.838) and ranked 7th (R. I. I. =

0.709), Extra one bdrm. interior introduction (MWV=2,725) rank 8th (R.I. I=0.681), Attached one-bedroom bungalow (MWV= 2,688) and ranked 9th (R. I. I. = 0.672), Attached two bedroom unit attachment (MWV=2.672) rank 10th (R.I. I=0.668), has degree of significant impact as “Present”, while Modification of building entrances porch (MWV= 2.672) rank 11th (R.I. I=0.530) and Modification of Roof (MWV= 2.080) and ranked 12th (R. I. I. = 0.520) has “less present” significant impact respectively.

Table 3C, Also indicated the most impact of adaptable housing flexibility being transformed on the study area with Modification of living room interior space (MWV= 3.580) and ranked 1st (R. I. I. = 0.895) Semi-detached two-bedroom bungalow (MWV=3.494) rank 2nd (R.I.I=0.873) Extra one bdrm. interior introduction (MWV= 3.446) and ranked 3rd (R. I. I. = 0.861) and Extra one bedroom unit attachment (MWV= 3.241) and ranked 4th (R. I. I. = 0.810) has degree of significant impact as “ high Present”. Other with significant impact as “Present” are: Semi-detached self-contained (MWV= 3.139) and ranked 5th (R. I. I. =0.784).

Modification of building entrances porch (MWV= 2.838) rank 6th (R.I. I=0.709), Modification of building facades (MWV= 2.822) and ranked 7th (R. I. I. = 0.705), Attached one-bedroom bungalow (MWV=2.784) rank 8th (R.I. I=0.696), Attached two bedroom unit attachment (MWV= 2.661) and ranked 9th (R. I. I. = 0.665), Extra two bdrm. Interior introduction (MWV=2.494) rank 10th (R.I. I=0.623), Introduction of dining space interior (MWV= 3.564) rank 11th (R.I. I=0.564) and Modification of Roof (MWV= 2.247) and ranked 12th (R. I. I. = 0.561). Akpanjanya located at zone E has the highest transformation of adaptable utilization of this spatial determinacy as shown in the table respectively.

Table 3b: Building Structures Transformation

Adaptable Flexibility		APO									
		Rating and Weighted Values					SWV	MWV	Std. D	R.II	Rank
		N	HPI (x1)	PI (x2)	MI (x3)	NI (x4)					
1	Extra one bedroom unit attachment	186	18	30	52	86	578	3.107	0.0160	0.776	3 RD
2	Modification of living room interior space	186	12	15	60	99	618	3.322	0.0178	0.830	1 ST
3	Semi-detached self-contained	186	20	25	95	46	539	2.897	0.0557	0.724	5 TH
4	Introduction of dining space interior	186	10	32	89	55	561	3.016	0.0162	0.754	4 TH
5	Semi-detached two-bedroom bungalow	186	18	25	30	113	610	3.279	0.0176	0.819	2 ND
6	Extra one bdrm. interior introduction	186	25	35	92	34	507	2,725	0.0146	0.681	8 TH
7	Modification of building facades	186	35	25	61	65	528	2.838	0.0152	0.709	7 TH
8	Attached one-bedroom bungalow	186	30	52	50	54	500	2,688	0.0144	0.672	9 TH
9	Attached two bedroom unit attachment	186	25	45	82	34	497	2.672	0.0143	0.668	10 TH
10	Extra two bdrm. Interior introduction	186	20	72	38	56	532	2.860	0.0153	0.715	6 TH
11	Modification of building entrances porch	186	54	75	35	22	395	2.672	0.0114	0.530	11 TH
12	Modification of Roof	186	59	72	36	19	387	2.080	0.0111	0.520	12 TH

SOURCE: Author field Research 2019

Table 3c: Building Structures Transformation

Adaptable Flexibility Variable 1: Building Structure Transformation		AKPANJANYA									
		Rating and Weighted Values					SWV	MWV	Std. D	R.I.I	Rank
		N	HPI (x1)	PI (x2)	MI (x3)	NI (x4)					
1	Extra one bedroom unit attachment	186	10	15	81	80	603	3.241	0.0174	0.810	4 TH
2	Modification of living room interior space	186	9	15	21	14	666	3.580	0.0192	0.895	1 ST
3	Semi-detached self-contained	186	15	20	75	76	584	3.139	0.0168	0.784	5 TH
4	Introduction of dining space interior	186	11	17	14	44	663	3.564	0.0191	0.564	11 TH
5	Semi-detached two-bedroom bungalow	186	14	20	12	40	650	3.494	0.0187	0.873	2 ND
6	Extra one bdrm. interior introduction	186	14	18	25	129	641	3.446	0.0185	0.861	3 RD
7	Modification of building facades	186	17	39	90	40	525	2.822	0.0151	0.705	7 TH
8	Attached one-bedroom bungalow	186	25	41	69	51	518	2.784	0.0149	0.696	8 TH
9	Attached two bedroom unit attachment	186	35	51	42	58	495	2.661	0.0143	0.665	9 TH
10	Extra two bdrm. Interior introduction	186	42	50	54	40	464	2.494	0.0134	0.623	10 TH
11	Modification of building entrances porch	186	15	21	18	132	528	2.838	0.0152	0.709	6 TH
12	Modification of Roof	186	45	78	35	28	418	2.247	0.0120	0.561	12 TH

SOURCE; Author field Research 2019

Table 4.0: Mean Score, Standard Deviation of Adaptable Physical Transformation

Infrastructure		VILLAGE ALLOCATION NAME									
Variable 1: Building Structure Transformation		N	GARKI GBAGYI		APO		AKPANJANYA		ΣMWV	ΣMWV / 3	RANKING
			SWV	MWV	SWV	MWV	SWV	MWV			
1	Extra one bedroom unit attachment	186	579	3.112	578	3.107	603	3.241	9.461	3.153	1 ST
2	Modification of living room interior space	186	460	2.473	618	3.322	666	3.580	9.375	3.129	2 ND
3	Semi-detached self-contained	186	613	3.295	539	2.897	5.84	3.139	9.582	3.194	3 RD
4	Introduction of dining space interior	186	458	2.462	561	3.016	663	3.564	9.042	3.014	4 TH
5	Semi-detached two-bedroom bungalow	186	461	2.478	610	3.279	650	3.494	9.251	3.083	5 TH
6	Extra one bdrm. interior introduction	186	486	2.612	507	2.725	641	3.446	8.783	2.927	6 TH
7	Modification of building facades	186	476	2.559	528	2.838	525	2.822	8.219	2.739	7 TH
8	Attached one-bedroom bungalow	186	501	2.693	500	2.688	518	2.784	8.165	2.721	8 TH
9	Attached two bedroom unit attachment	186	470	2.526	497	2.672	495	2.661	7.859	2.619	9 TH
10	Extra two bdrm. Interior introduction	186	451	2.424	532	2.860	464	2.494	7.778	2.592	10 TH
11	Modification of building entrances porch	186	396	2.129	395	2.123	5.28	2.838	7.090	2.363	11 TH
12	Modification of Roof	186	347	1.865	387	2.080	418	2.247	6.192	2.064	12 TH
Total		ΣMWV =	30.628	31.484	36.31						
<p>GARKI GBAGYI Mean of ΣMWV = 30.628 / 12 = 2.55 APO Mean of ΣMWV = 31.484 / 12 = 2.62 AKPANJANYA Mean of ΣMWV = 36.31/12 = 3.02</p>											

SOURCE; Author field Research 2019

The result of the analysis in table 4 reveal the respondents with Housing flexibility resulting from adaptable physical transformation. This show that Akpanjanya has the highest number of transformation, it has first six (6) building structures variable of Mean weighted Value (MWV) all above 3.00. This is followed by Apo, which has four (4) variable ranked above 3.00 and Garki with only one (1) MWV. This analysis was also shown in Table 3A, 3 Band 3C respectively. Among the twelve (12) variables examined using the decision rule for research in Table 2. Thus the table 4, shows the rating of summation score for (Mean weighted Value, Σ MWV), this include (1) Extra one-bedroom unit attachment with a (Σ MWV =3.153), (2) Modification of living room interior space (Σ MWV =3.129), (3) Semi-detached self-contained (Σ MWV =3.194) (4) Introduction of dining space interior (Σ MWV =3.014) and (5) Semi-detached two-bedroom bungalow (Σ MWV =3.083) all “Highly present” with Most Significant impact and rating Summation of Mean Weighted Value of 0.80-0.89 transformable adaptable flexibility. However, this is followed by Extra one bdrm. interior introduction (Σ MWV =2.927), Modification of building facades (Σ MWV =2.739), Attached one-bedroom bungalow (Σ MWV =2.721), Attached two bedroom unit attachment (Σ MWV =2.619), Extra two bdrm. Interior introduction (Σ MWV =2.592) and Modification of building entrances porch(Σ MWV =2.363) all “Present” with Significant Impact and rating Summation of Mean Weighted Value of 0.60-0.79. Finally only Modification of Roof has (Σ MWV =2.064) with Less significant and rating Summation of Mean Weighted Value of 0.40-0.59 respectively. Thus indicating these variables were perceived to be “Less present” by the respondents.

Conclusion

Housing flexibility as identified by the dwellers of these Abuja residents as part domestic architecture design whose planning choice has been utilized both in terms of functional construction. This is an integral part of housing adaptability for

change over its lifetime. The many solutions to housing needs and demand for different types of spaces for different functions intend to fulfil inhabitants’ requirements in accordance with their lifestyle that increases their general satisfaction for attachment of extra units. The aspiration of this home owner demand has been met by the Federal Capital Development Authority which allows the occupant/residents carry out transformation of their dwelling units due to the flexible nature of the houses.

The study finds out that most of the occupants expressed satisfaction with the flexibility nature of the houses and the adaptability of space that has been greatly improved on. This either by providing more living spaces or by connecting with more interior dwelling units as means of attaching extra residences (family) units. The study view differently from other pervious literature that housing developer built houses that are rigid and are confound to be expensive and without the privilege for the masses to carry out modification as aspired, which is not sustainable on the long run due to their strict prototype development. It recommends with a view to its introduction in future housing developments policy and a re-think on housing flexible designs on the part of planners and architects for possibilities incorporating more dwelling units in future by residents as the need arises.

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