Factor Analysis of Housing Affordability among Civil Servants in Nigeria

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Abstract

Purpose - Housing affordability is a major challenge especially to low-income groups because of the need for other basic non-housing goods. This study is aimed at examining the determining factors of housing affordability in the households of low-income civil servants in selected parts of Nigeria.

Design/methodology/approach - Using multi-stage sampling technique, Lagos, Oyo, and Ekiti States were selected in Southwestern Nigeria. Questionnaire administration was undertaken among low-income civil servants on grade levels 1 to 6 drawn from the offices of government ministries in the three selected states. Data analysis of information derived from retrieved copies of the questionnaire was undertaken using Mean Rating and Exploratory Factor Analysis.

Findings - Findings indicate that available income and housing infrastructure; cultural background; and sources of construction materials constitute the key factors to housing affordability among low-income civil servants in Southwestern Nigeria.

Research limitations - This study is primarily centered on low-income civil servants in Southwestern Nigeria. Undertaking the study in other geopolitical zones of Nigeria as well as other developing countries would probably yield other areas for further research and policy implications.

Theoretical/Social/Practical implications - The study posits that, encouraging the adoption of indigenous building materials; tax reliefs; and increase in minimum wage will likely improve the present state of housing affordability among the studied low- income civil servants.

Originality/value - The study tends to be a significant contribution to housing studies among low-income civil servants. The findings of this study may be adapted for policy decision-making in other emergent economies like Nigeria.

Keywords: Determining factor, Housing, Housing affordability, Nigeria, Population

1.0 Introduction

The place of housing and housing costs in most households, universally, is pivotal. Housing holds a special place in human existence and is recognised as one of the fundamental measures of the standard of living, rate of poverty, as well as prosperity level of households in the society (Uwatt, 2019; UN-Habitat, 2021; Gupta, 2022). Notably, housing does play a key part in national development. Its impacts in national development can be traceable given that it creates employment; encourages positive social attitudes; lowers crime rates, uprisings, and extremism. Thus, the level of housing may significantly be deployed to measure wealth disparities and security issues.

Besides, housing costs are the single highest expense for the vast majority of individuals and households (Chowdhury, 2013; Eurostat, 2020). Many times, households might not have the resources to cover the costs of both housing and other non-housing needs. It is more likely that extreme restrictions on the consumption of essential non-housing products will be imposed by housing costs, thereby creating difficulties arising from housing affordability (Adeleke, 2021; Kneebone & Wilkins, 2016; Millanzi, 2017; Revington, 2015). In most countries throughout the world, studies on housing affordability are growing as it is predicted that by 2025, 1.6 billion people would live without the opportunity of reasonably priced, good housing and, in the worst-case scenario, many would be homeless (Adeleke, 2021; Oyo-Ita, 2017; Woetzel, Ram, Mischke, Garemo, & Sankhe, 2014). There are about 95 million people in the United States experiencing housing affordability challenges (Habitat for Humanity, 2023). According to assessments by the UN, an additional 3 billion people by 2030 will make up about 40% of the global population, and their housing requirements will imply the need for new, affordable 96,150 housing units each day and 4,000 housing units every hour (United Nations Human Settlement Programme – UN-Habitat, 2005).

In addition, the cost of housing continues to be a significant barrier for low-income households worldwide due to the rapid urbanisation of the world. Approximately 54 percent of the world's population was recorded as living in urban regions in 2014, and by 2050, it is anticipated that 66 percent of people will live in urban areas (United Nations, 2014). The United Nations also predicted that Africa and Asia, especially Nigeria, China, and India, will account for 90% of the growth. There is a severe housing scarcity as a result of the fast urbanization that has occurred in the bulk of global cities, making homes unaffordable for those with low incomes.

Moreover, successive government policies are intended that every household, regardless of income status, will have accessible inexpensive housing, without adversely affecting their capacity to afford other basic essentials of life. However, because of insufficient supply relative to demand, the affordable housing scarcity is more acute and evident in emerging nations like Nigeria than in wealthy nations (UN-HABITAT, 2011). Given the fact it consumes a significant portion of low-income earners' income, notably in Nigeria, housing affordability has persistently eluded the great proportion of the population (Adedeji & Olotuah, 2012; Adeleke & Olaleye, 2020). Aliyu, Kasim, and Martins (2011) had earlier reported that many states in the country were witnessing an increase in

unaffordable housing. Moreover, the country's housing shortage was predicted to be about 17 million in 2012; to close the gap, 800,000 housing units were proposed to be developed yearly, whereas only 100,000 housing units were achieved annually; this could potentially lead to a serious housing crisis (Centre for Affordable Housing Finance in Africa, 2016).

It is obvious that housing affordability for low-income families ought to be a top priority for policymakers in all countries, but the first step should be to identify the key factors that influence housing affordability. This article aims to analyse the factors influencing the extent of housing affordability of low-income civil servants in southwestern Nigeria, in order to provide empirical evidence for the development and improvement of housing policy.

1.1 The Study Area

The Southwestern geo-political zone of Nigeria comprises Lagos, Oyo, Osun, Ondo, Ogun, and Ekiti States, as shown in Figure 1. The capital cities of each state respectively are Ikeja, Ibadan, Osogbo, Akure, Abeokuta and Ado-Ekiti. Fifty percent (50.0%) of the states were selected purposively for survey. It should be borne in mind that some states were carved out of each other. For instance, Ekiti was carved out of Ondo state while Osun was from Oyo state. These states are thus expected to be similar in terms of their socio-economic characteristics and occupation. Therefore, Ekiti and Ondo states are quite similar; Oyo and Osun can be grouped together while Lagos and Ogun states may exhibit similar features of high-profile states. The capital cities of Lagos, Oyo and Ekiti states respectively, namely: Ikeja, Ibadan and Ado-Ekiti were selected for the study. This is because the states' secretariats are based in the capital of each state.
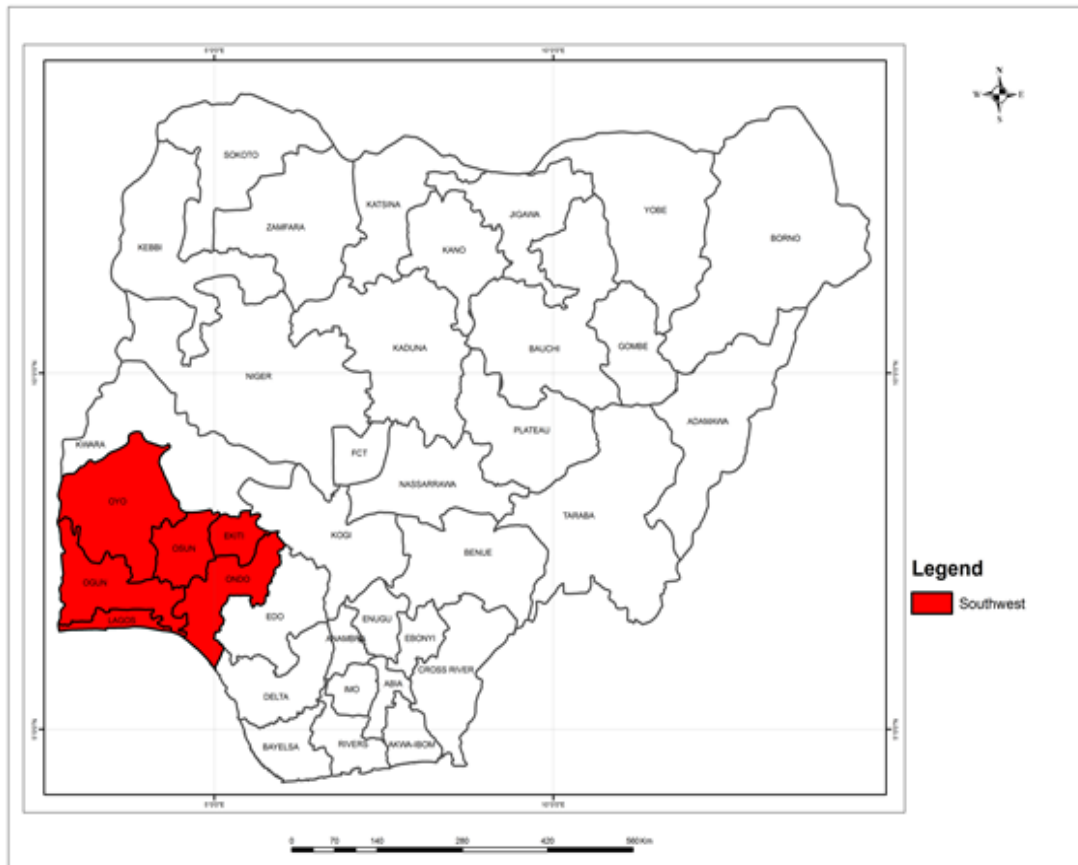
Figure 1: Map of Nigeria Showing the Southwestern Geopolitical Zone
Source: Cooperative Information Network (COPINE), OAU. Ile-Ife 2016

2.0 Literature Review and Conceptual Framework

'Affordable housing' and 'housing affordability' are interchangeably used despite being two different concepts (Chowdhury, 2013). Housing affordability is concerned with securing some given standards of housing or different standards at a price or rent which does not impose an unreasonable burden on household incomes (AHURI 2004; Bichi, 2002; Boamah, 2010; Maclennan and Williams 1990; Malpezziet al., 1985). Affordable housing refers broadly to all housing developed at levels affordable to low- and moderate-income house- holds (Bieri, 2014; Wardripet al., 2011).Affordable housing is also viewed as a human right. According to the National Housing Policy adopted in 2012, "The provision of adequate housing that is safe, secure, accessible, affordable and sanitary is a fundamental human right, as enshrined in the United Nations Habitat Agenda - the global call on human settlements." Governments are therefore expected to create an enabling environment to foster the realisation of same. Otherwise, it will amount to a breach of the fundamental human right of the citizenry. Housing affordability problem manifests in form of enormous stress on existing stock, overcrowding, unsanitary condition of buildings, high rent, homelessness, slum and squatter settlement, strain on inadequate amenities and facilities (Adeleke, 2021).

Generally, the problem of housing affordability has been linked to various factors. Adeleke and Olaleye (2016) reviewed the factors that significantly influence the housing affordability levels of low-income households. The authors submitted that determining factors are their socioeconomic characteristics, their choice of housing and housing preference. In a related study, Akinyode (2017) investigated the determinants of housing affordability in the urban centres of Ibadan, Oyo state, Nigeria, using explorative factor analysis. Findings revealed that the most critical factors to housing affordability are house rents, housing preference, housing satisfaction, land price and government intervention.

In Seniela, Babarinde and Holis (2019)'s study, an attempt was made to investigate cultural lineage impact, in relation to family bonds, tribes, clans and culture, on public housing affordability of low, medium, and high-income earners in Papua New Guinea. The authors submitted that three approaches guide housing affordability measurements. These are normative, behavioural, and subjective approaches. Normative refers to threshold values, in terms of the percentage of household income spent on housing. Behavioural implies the consumption behaviour of the household, while the subjective approach relates to the individual assessment of their own extent of housing affordability. The study thus employed the behavioural approach. Major findings revealed that the cultural lineage of the people constitutes a major determinant of housing affordability of indigenous groups.

Meen (2018) evaluated the modalities of measuring housing affordability. The author indicated that it is important to reflect the characteristics and circumstances of the group that is being studied. This is with particular reference to low-income earners and proposed first-time owners.

Coskun (2022a) examined the housing affordability problem between 2010 and 2019 in Turkey's metropolitan areas of Istanbul, Ankara, and Izmir from the viewpoint of vulnerable social groups (VSG). To create house cost-to-income (HCI) ratios that are socially meaningful, the author used house cost and numerous income parameters, including residual income. The author created 12 general and 76 particular home affordability metrics to quantify the socioeconomic components of the affordability dilemma at the national and metropolitan levels. According to the author, Turkey's high cost of living and low/unequal income distribution are both contributing factors to the affordability dilemma facing VSG. Moreover, the findings of the study indicated that demographic and socio-economic differences, which ultimately lead to income and homeownership disparities, are at the foundation of VSG's inability to purchase housing.

Similarly, Kleshcheva (2021) examined the principal factors influencing housing affordability level in the Republic of Tatarstan of the Russian Federation. The study identified inflation rates, population size, and cost of housing, loan interest rates, housing construction rates, investment rates, population incomes, unemployment rates, national currency exchange rates and the development level of the economic system as the major factors impacting housing affordability in the region. The authors indicated that supply, demand, and the housing market climate are also deciding factors.

Coskun (2022b) also undertook to examine the short and long-term market-sensitive factors affecting housing affordability by adopting an empirical instrument to address the

situation, which reveals a continuous housing affordability crisis in an emergent market environment. The study adopted econometric models to explore the factors that affect the distinctively designed efficient housing affordability index and the house price to income ratio index using Turkish data from 2007 M06 and 2017 M12. Findings of the study showed that, the rise in loan availability, rent, and construction costs are the key causes of the housing affordability dilemma.

Likewise, Jiburum, Nwachukwu, Mba, Okonkwo and Okeke (2021) investigated the determining factors of the housing affordability of low, medium, and high-income earners (i.e., the equivalent of salary grade level 01–06, 07–12, and 13–15 in Government employment respectively) in Abuja, Nigeria. The study utilised principal component analysis (PCA) to determine factors that accounts for the housing affordability of each income group. Findings indicated that the key factors that determine the housing affordability were peculiar to each of the income groups. The critical factors for the low-income residents in Abuja were housing costs, property acquisition costs, and housing finance. On the other hand, for the medium-income earners, the responsible factors were land and finance costs, housing costs, family shelter requirements, as well as infrastructure and building costs. For the high-income earners, the major factors were property charges; family and housing costs; land and non-housing expenditures; and infrastructure and building costs.

Due to the foregoing, factors influencing housing affordability could be categorised into two; namely: directly housing related and non-housing related and could emanate from two sides - demand and supply side. They are basically summarised as the socio-economic characteristics of the household, housing characteristics, household preference, spending on non-housing goods and institutional issues. The factors are diagrammatically illustrated in Figure 2 below:
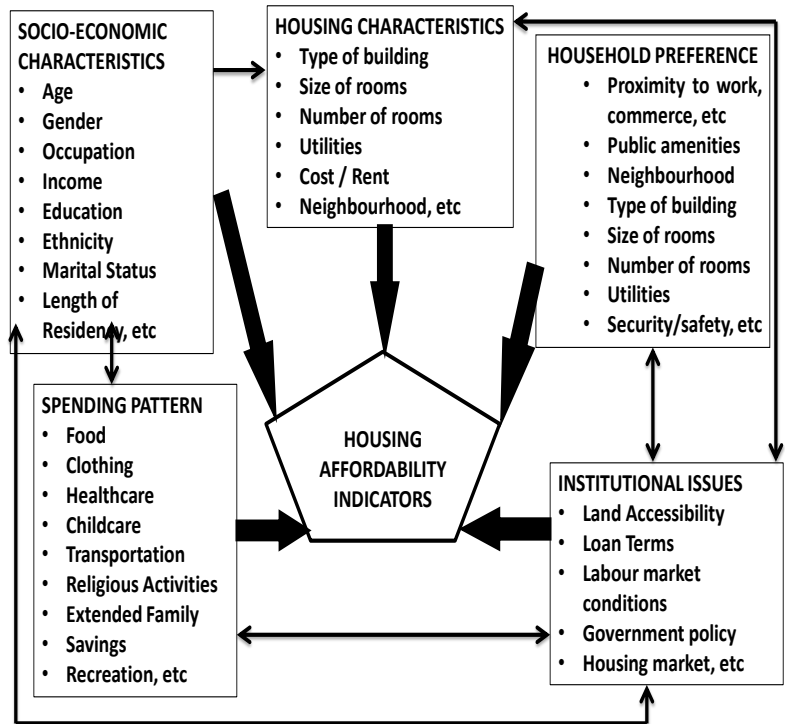
Figure 2: Conceptual Framework on Determinants of Housing Affordability
Source: Author's Summary of Review

3.0 Research Method

This study adopted a case study research design, utilising both primary and secondary data. Respondents were surveyed through the administration of questionnaires. Prior to the questionnaire administration, a total of 100 copies of questionnaire were administered for a pre-test on a sub-set of the intended low-income civil servants to check the internal consistency of the responses. From the total, 89% were retrieved back duly filled. Cronbach's alpha test was used for analysing the reliability and viability suitability of the questionnaire as a data collection instrument. Subsequently, 112 items were loaded for the test. The output of the pre-test using the Cronbach's alpha test is 0.929 which is excellent as indicated by Table 1.

Table 1   Cronbach's Alpha Test of Reliability

Reliability Statistics	
Cronbach's Alpha	No. of Items
.929	112

This shows that there is internal consistency of questions regarding their loading onto the same factors. Following this, a multi-stage sampling technique was used to administer 188, 394 and 213 questionnaires, systematically, in Lagos, Oyo and Ekiti states respectively to respondents on grade levels 1 to 6 drawn from124, 210 and 119 offices respectively in each of the ministries in the three selected states. The quantity of questionnaire returned duly filled were 158 (84%) 285 (72.3%) and 130 (61%) respectively. Respondents were asked to rate the factors that were germane to the levels of housing affordability of their households. A total of 46 variables were identified in the literature review and as

conceptualised in Figure 2. They include socio-economic characteristics, housing attributes, household preference, spending pattern and institutional factors. The rating processed using relative importance index (RII) of "not at all important" (N.A.A.I), "slightly important" (SL.I), "somewhat important" (SO.I), and "moderately important" (M.I) and "extremely important" (E.I) were assigned weight values of 1, 2, 3, 4 and 5 respectively. The mean and deviation about the mean for each factor were derived and deductions were made for each state. Investigations into the determinants of the housing affordability of low-income civil servants in the study area were done using exploratory factor analysis, using SPSS. The adequacy of the data loaded for the study was tested by means of Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity and the result is shown in Table 2.

Table 2   Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.920
	Approx. Chi-Square	6495.388
Bartlett's Test of Sphericity	Df	1035
	Sig.	.000

Table 2 reveals that the KMO is 0.920 and as such, the patterns of correlations of the variables are compact and not diffused, distinct and reliable factors will be yielded by the factor analysis.

4.0 Analysis and Discussions

A highly significant result was obtained for the Bartlett's test (which helped to discover if there was any relationship between the variables to be analysed) with a p value of 0.000. The result indicated that factor analysis is appropriate for the conduct of the analysis as the significance value is less than 0.05, therefore, there are some relationships in the identified factors within the data set. The study adopted 0.75 loading cut-off following which Principal Component Analysis (PCA) was done to extract reliable variables from the correlation matrix, with the aid of Varimax rotation method with Kaiser Normalisation. The result is depicted in Table 3. Listed in the table is the eigenvalue related to each factor or linear component before extraction, after extraction and after rotation. Preceding the extraction was the identification of the 46 factors within the data set. The Eigenvalues are proportional to the variance explained by that particular factor. To this end, factor 1 explains 53.591% of the total variance. Subsequently, factors with Eigenvalues greater than 1 were extracted by SPSS. Three factors were extracted. Prior to rotation, factor 1 and the other 2 had variances of 53.591%, 5.966% and 5.004% respectively, and after rotation, the variances were 33.104%, 22.265% and 9.193% respectively. The communalities before and after extraction of reliable factors were done using the Principal Component Analysis. The result is indicated in Table 4. The communalities after extraction reveals the common or shared variance in the data structure, it shows the proportion of variance explained by the underlying factors. The lowest, and thus less relevant as determinant of housing affordability level, is neighbourhood quality with a variance of 17.5%, while the highest, and by implication most relevant is security of the environment and accounted for 83.2% after extraction. The average communalities show that the three factors explain 64.562% of the total variance.

The Rotated Component Matrix is shown in Table 5. Following the factor loading of 0.75, values below this number were eliminated. This resulted in variables loading into only three components. The variables that loaded into each of the three components were examined in order to determine a common theme for them. Under the first component, the following have been listed: income, land availability, well/borehole water supply, security of the environment, pipe borne water supply, type of building, and number of rooms, electricity supply and sanitation within the neighbourhood. This list shows that the variables that loaded very high relate with services and could be termed **Income and Housing Infrastructure.** The listed variable under component: tribe/ethnicity. This component can therefore be regarded as **Cultural Background.** Variables listed under component 3 are: non-use of indigenous building materials and use of indigenous building materials. These variables could be termed **Source of Construction Materials.**

Income level, and cost of housing (as related to the cost of construction materials), having a direct impact on housing affordability confirms the findings of Kleshcheva (2021) and Coskun (2022a)'s studies. Jiburum et al. (2021) had also submitted that the cost of infrastructure has a bearing on housing affordability. Moreover, Meen (2018) and Jiburum et al. (2021) asserted that, depending on the particular group being investigated, determinants of housing affordability may vary. Besides, there are normative, behavioural, and subjective approaches to measuring housing affordability (Seniela et al., 2019). Hence, in the context of the behavioural approach, cultural background may constitute a critical determinant of housing affordability as indicated in Seniela et al., (2019)'s findings, and this is further consolidated and affirmed in this study.

It can be summarised from the foregoing analysis that the determinants which significantly influenced the housing affordability of low-income civil servants in southwestern Nigeria are: income and housing infrastructure, cultural background and source of construction materials.

Table 4: Communalities of the Determinants of the Housing Affordability of the Low-income Civil Servants

	Initial	Extraction
Income	1.000	.738
Land availability	1.000	.763
Government policy	1.000	.663
Land registration process	1.000	.648
Income tax	1.000	.609
Property taxes	1.000	.486
Interest rate on loan	1.000	.524
Cost of building material	1.000	.728
House rent	1.000	.628
Price of houses	1.000	.677
Cost of building	1.000	.697
Type of building	1.000	.699
Number of rooms	1.000	.755
Size of rooms	1.000	.756
Labour cost	1.000	.680
Neighbourhood quality	1.000	.175
Attachment to a particular neighbourhood	1.000	.581
Size of family	1.000	.730

	Initial	Extraction
Age of family members	1.000	.644
Gender of family members	1.000	.646
Marital status	1.000	.610
Level of education	1.000	.761
Security of the Environment	1.000	.832
Sanitation within the neighbourhood	1.000	.759
Road length within the neighbourhood	1.000	.562
Access road within the neighbourhood	1.000	.185
Road network within the neighbourhood	1.000	.664
Access to mortgage facility	1.000	.664
Electricity supply	1.000	.728
Pipe borne water supply	1.000	.721
Well/Borehole water supply	1.000	.770
Skilled artisan availability	1.000	.580
Non-Use of indigenous building materials	1.000	.693
Use of indigenous building materials	1.000	.750
Use of expensive building materials	1.000	.709
Culture	1.000	.699
Beliefs	1.000	.749
Spiritual inclinations	1.000	.680
Housing related expenses	1.000	.248
Non-housing related expenses	1.000	.602
Social status	1.000	.731
Occupation	1.000	.694
Personal taste/Preference	1.000	.647
Supply of houses in the market	1.000	.573
Number of people demanding for house	1.000	.621
Tribe/Ethnicity	1.000	.640

Extraction Method: Principal Component Analysis

Table 5: Rotated Component Matrix of the Determinants of the Housing Affordability of the Respondents

	1	2	3
Income	.846		
Land availability	.828		
Well/borehole water supply	.811		
Security of the environment	.801		
Pipe borne water supply	.799		
Type of building	.773		
Number of rooms	.771		
Electricity supply	.764		
Sanitation within the neighbourhood	.763		
Cost of building materials			
Cost of building			
Size of rooms			
House rent			
Government policy			
Price of houses			
Size of family			
Road network within the neighbourhood			
Land registration process			

Access to mortgage facility	
Interest rate on loan	
Labour cost	
Personal taste/preference	
Income tax	
Marital status	
Skilled artisan availability	
Property taxes	
Access road within the neighbourhood	
Tribe/ethnicity	.788
Spiritual inclinations	
Beliefs	
Number of people demanding for houses	
Social status	
Gender of family members	
Non-housing related expenses	
Supply of houses in the market	
Age of family members	
Level of education	
Occupation	
Attachment to a particular neighbourhood	
Housing related expenses	
Neighbourhood quality	
Non-use of indigenous building materials	.786
Use of indigenous building materials	.768
Use of expensive building materials	
Culture	
Road length within the neighbourhood	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation.
Rotation converged in 9 iterations

5.0 Conclusion and Recommendations

Attempts have been made in this study to assess the key determining factors of housing affordability in the households of low-income civil servants in southwestern Nigeria. Findings of the study indicate that, there are three primary determinants, around which the very many other factors may be grouped together, to determine housing affordability in the category of the study population in the study areas. The key determinants are: Income and Housing Infrastructure, Cultural Background, and Source of Construction Materials. Many other factors that make up these key determining factors are: well/borehole water supply, tribe/ethnicity, security of the environment, non-use of indigenous building materials, income, type of building, land availability, pipe borne water supply, electricity supply, sanitation within the neighbourhood, use of indigenous building materials, and number of rooms. Proceeding from the findings of this study, the following recommendations are made to enhance government policies on housing affordability:

i. Wage increases and tax breaks to increase households' disposable income.

ii. Encourage the use of indigenous building materials: As research into employing indigenous building materials has been undertaken in the nation in an effort to lower the cost of house development. The findings of such study should be made public to encourage others to use them in their own endeavours. The government should encourage the use of such materials by including them into the building of government facilities like secretariats, schools, hospitals, etc. People should be encouraged by the provision of lower property taxes for those who built with local materials as well.

iii. Stop the random dumping of trash: Strict measures including fines, sanctions, and punishments should be implemented on defaulters who are apprehended in the act as well as the nearby landowners of communities where trash is indiscriminately dumped. This will make them to become more environmentally responsible. The government should also make sure that every home is documented with the waste management board, which will then regularly and affordably assign trucks to such homes for waste disposal management.

iv. Establishing site and service schemes: By acquiring, planning, and constructing basic facilities and services on the land, the government may ensure that it is easily accessible. The provision of serviced plots will guarantee tenure security and aid in the self-construction activities of households.

v. Consistent electricity power supply: The authorities should actively engage youngsters and host communities, who are also the final consumers of electricity and hence significant players alongside the government, in order to effectively resolve the issue of vandalism of public electrical mains. This will open the door for better electricity supply and raise the standard of living for low-paid civil servants and other groups.

vi. Reviving Water Boards and Corporation: In the past, many people, especially those living in cities, could draw water directly from the public mains and use it in their homes. To help the low-income earners who struggle to find portable water, functional water boards should be re-established.

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