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Research Article

Factors Influencing Housing location choice under Public-Private Partnership approach in Abuja Municipal Area Council, Abuja, Nigeria

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ABSTRACT

Housing is a fundamental human need and a key indicator of social and economic development. In urban cities such as Abuja, Nigeria, housing demand has outpaced supply, prompting the adoption of Public Private Partnership (PPP) schemes to bridge the deficit. Housing location choice refers to the process through which households decide where to live, which may be influenced by socioeconomic and environmental factors. This study advances existing housing location choice research by examining demand-side determinants within the Public Private Partnership (PPP) housing scheme in Abuja, Nigeria, using multivariate techniques. The concern about the quality of life in urban areas has led to an increasing concern amongst policy makers and planners on how to measure variables that influence housing location choice among the residents in the Abuja Municipal Area Council. This study examined the factors influencing housing location choice under the PPP scheme in Abuja. Four hundred (400) households were systematically selected from fourteen PPP housing estates that were purposely selected, with 357 valid questionnaires (89.3%) analyzed. Data were examined using descriptive statistics, mean score ranking, and factor analysis. Mean score revealed that safety and secure environment ranked highest (Mean = 4.24), estate location (Mean = 4.13) while affordability ranked lowest (Mean = 3.22). Factor analysis identified three principal components explaining 60.79% of the total variance: socioeconomic accessibility (36.75%), housing structure and estate attributes (12.81%), and basic amenities and service quality (11.23%). The study concludes that factors influencing housing location choice under PPP schemes in AMAC are multidimensional rather than a single factor. It recommends spatially balanced land allocations and the institutionalization of GIS-based location suitability mapping to enhance equitable, sustainable, and efficient PPP housing development.

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1 Introduction

Abuja, Nigeria's Federal Capital Territory (FCT), is arguably one of the fastest-growing cities in Africa, accommodating residents from diverse ethnic and socio-economic backgrounds. Adaji (2024) opines that the demand for housing in Abuja has far exceeded supply, resulting in a complex and escalating urban challenge largely driven by rapid urbanization and population growth. The city has experienced a substantial influx of migrants from within and outside Nigeria, as individuals relocate in search of better economic opportunities. In response to these challenges, the government has increasingly recognized the pivotal role of private sector participation in housing delivery through private investors and capital investment in developing residential properties, which has led to increased access to residential properties (Oshikoya & Ifediora, 2021). The Public Private Partnership (PPP) framework has emerged as a viable mechanism for bridging the housing finance gap, enhancing infrastructure provision, and improving the overall accessibility and quality of housing in Abuja (Babalola, 2016).

The expansion of PPP initiatives in housing is largely due to government underperformance, inadequate funding to sustain multiple projects, and limited capacity for effective risk management (Shittu et al., 2022). AbdulAzeez et al. (2016) noted that PPP was introduced in Abuja to enhance private sector participation in public housing, thereby reducing the government's financial burden in providing adequate housing. Under this arrangement, Kabiru et al. (2024) assert that the implementation of PPP in housing programs within the Federal Capital Territory (FCT) has become a pivotal strategy for addressing the increasing pressures of urbanization and the need for sustainable housing and infrastructure development. By leveraging the strengths of both the public and private sectors, it aims to enhance operational efficiency, promote innovation in housing delivery, and mobilize financial and technical resources more effectively.

Housing location choice (HLC) refers to the decision by a household regarding where to live. HLC represents the locational preference of individuals or households in selecting residential property; it is influenced by a range of factors (Oladapo et al., 2019). Such factors may include accessibility to transportation, proximity to workplaces and services, neighborhood safety, and environmental

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quality and socioeconomic characteristics. Physical housing attributes such as design, aesthetics, and management, alongside neighborhood features like safety, urban services, low crime rates, and absence of pollution, significantly influence households' long-term residential decisions (Eyinla, 2024).

Despite growing literature on housing delivery and PPP in Nigeria, existing studies largely concentrate on supply-side issues such as financing, policy implementation, and institutional constraints. There is little focus on the demand perspective of PPP, specifically how residents make housing location choices within PPP housing estates. Despite increasing PPP housing developments in Abuja, empirical evidence on how residents make location choices within PPP estates remains limited, particularly regarding the interaction between socioeconomic accessibility, housing attributes, and service quality in understanding how socioeconomic accessibility, housing structure, safety, infrastructure, and service quality interact to influence residential choice under PPP schemes in Abuja. It is against this background that this study seeks to examine the factors influencing residential choice under the PPP scheme in AMAC. To achieve this, an attempt was made to investigate these factors for household choice of location in the study area.

1.1 Literature Review

1.1.1 Concept of housing

Housing is termed as a place where shelter, refuge, comfort, security, and dignity are provided (Amao & Ilesanmi, 2013). It is the physical structure that provides shelter and other aspects of the social environment which linked man with the environment. Ewuoso (2020) sees housing as a basic human necessity that people, governments, and societies have sought to meet using different approaches over the years. Across all societies, housing is considered a top priority, as it provides shelter, safety, and comfort (Oshikoya & Ifediora, 2021). While Ogunbayo et al. (2022) assert that housing is one of the fundamental necessities of human life globally. Owolabi et al. (2023) opine that housing is a building that is designed to provide a sense of security for those who live in it, with the purpose of enabling individuals to live a fulfilling and productive life.

Housing is more than just a physical building; it is a home, a space that protects and nurtures its residents (Umoh et al., 2023). The urban housing crisis has been attributed to several factors, including rapid population expansion, which has significantly worsened the shortage of adequate and efficient housing, as well as other essential infrastructural services (Idakwoji & Emusa, 2024). Population growth has placed immense pressure on housing demand, surpassing the nation's supply ability, particularly in the urban areas of Nigeria. Job et al. (2018) further noted that the crisis is aggravated by a high birth rate and continuous rural-urban migration. Given its importance in fostering economic growth, employment, and well-being, housing remains a critical issue in socioeconomic development (Ugonabo, 2023). As a result, the urgent need for adequate and decent housing remains a pressing concern that requires immediate and holistic attention from stakeholders and policymakers.

1.1.2 Public-Private Partnership

Public Private Partnership is an arrangement between a public entity and a private entity, where services traditionally provided by the public sector are now largely delivered by the private sector under clearly defined terms and conditions established at the outset (Fatile et al., 2015). In the view of Oguntimehin and Alabi-Akugbe (2023), PPP involves the collaboration between government entities and private sector organizations to jointly address societal issues and deliver public services. This has gained prominence as a solution to address housing shortages and improve housing conditions in Nigeria. Oni and Adamu (2018) defined PPP as an agreement between a public body and a private entity, in which the private organization develops a public utility or infrastructure while assuming significant financial, procedural, and operational risks. Yan (2023) specifically defines PPP within the housing sector as a partnership between the public and private sectors, established through a contractual arrangement that leverages private sector financing, design, construction, commercialization, maintenance, or operational management for the delivery of affordable housing and, in some cases, ancillary services. The public sector's contribution may be in the form of cash or equivalents such as land, development rights, revenue from land or infrastructure assets, tax relief, or a share in the equity generated over a fixed period. Meanwhile, the private sector's remuneration is largely performance-based.

1.1.3 Housing location choice

Choice implies having the ability to pick from alternatives, even if the options are imperfect solutions. It involves decision-making and can include judging the merits of multiple options and selecting one or more of them (Aliyu et al., 2018). The concept of housing location choice (HLC) is the locational choice made by an individual household in relation to residential property and is informed by a variety of factors (Oladapo et al., 2019). The housing choice, defined here as the choice of the place where the household lives, is the decision-making process where individuals or households select where to live. When the household or individual is unhappy with its current home, deciding where and when to move is an equally

complex issue that influences housing choice. Oshikoya and Ifediora (2021) see housing location choice as affected by a combination of factors that are very much interconnected. Socio-economic factors are simply the combination of social and economic factors that form part of the general lifestyle component, which plays a crucial role in shaping our housing/residential choices. These factors include income level, proximity to work, schools, and amenities, housing costs, personal preferences, the characteristics of the neighborhood, marital status, employment status, and education level, among others.

1.2 Theoretical Framework

1.2.1 Housing Need Theory

The Housing Need Theory, proposed by Rossi (1955), explains housing satisfaction and dissatisfaction as outcomes of evolving household needs over the life cycle. As families grow and socio-economic conditions change, housing and neighborhood preferences also shift, creating gaps between current living conditions and desired environments. This aligns with Maslow's hierarchy of needs, which emphasizes housing as essential for safety, belongingness, esteem, and self-actualization. When these needs are unmet, households experience dissatisfaction, often leading to relocation or housing adjustments (Mekebo & Dong, 2021). The Housing Need Theory highlights the necessity of continuous housing provision as needs arise over time. This theory supports the adoption of PPPs as a strategic approach to bridge the existing housing gap by leveraging government support and private sector innovation. PPP initiatives can provide sustainable, affordable, and high-quality housing solutions that meet the needs of diverse Nigerian households, such as affordable housing for low-income earners, mid-range housing for middle-class earners, and premium housing for high-income earners.

The theory highlights the dynamic nature of housing needs, showing how family, income, and social aspirations influence housing location choice. Factors such as affordability, accessibility, safety, environmental quality, and neighborhood characteristics collectively shape satisfaction with one's living environment. In the context of Abuja's PPP housing scheme, the housing need theory provides a framework for understanding how government and private collaboration can meet challenging housing needs through affordable and quality options for different income groups. While critics note that the theory focuses primarily on housing supply and overlooks market forces such as affordability and location preferences (Glaeser & Gyourko, 2018), it remains valuable for explaining how shifting needs and satisfaction levels influence residential choices under PPP arrangements in Abuja.

1.2.2 Principal Agent Theory (PAT)

Principal Agent Theory (PAT) was developed by Ross and Mitnick in 1976. PAT examines the relationship between a principal and an agent in the execution of tasks, particularly within project management. It focuses on the delegation of responsibilities where one party, the principal, assigns tasks to another, the agent, for execution (Fatile et al., 2015). An agent is a person who acts on behalf of another person, the principal, in dealing with other people. The agent acts on the name of the principal and commits the principal to agreements and transactions. The PAT examines how a principal (the government) delegates tasks to an agent (private developers) and seeks to align their interests. It provides a framework that enhances our understanding of how governments can manage agency risks, structure contracts, and establish governance systems to ensure efficient, transparenterza2 and sustainable housing development. In the context of quality housing delivery, the success of a housing project depends largely on the skills, knowledge, and professionalism of the agent (the private partners).

On the contrary, PAT assumes that the government can monitor and evaluate the agent's performance effectively, but housing quality is difficult to measure beyond surface-level inspections. This theory also focuses mainly on economic efficiency and assumes that rational actors seek to maximize their own benefits (Stone, 2006). However, housing quality provision is not purely a market-driven process it involves social and ethical considerations such as affordability, inclusivity, and community well-being. PAT assumes that agency problems can be mitigated through contracts and oversight, but in reality, political influence and corruption can distort decision-making (Flyvbjerg et al., 2019). By linking these theories to practical PPP housing implementation, the study examines how strategic cooperation, risk-sharing arrangements, and financial collaboration can overcome constraints in housing delivery. This theoretical lens helps to identify the key determinants of housing quality in PPP schemes, including construction standards, service provision, affordability mechanisms, and long-term sustainability considerations.

1.3 Literature Review

An increasing amount of literature has been published recently on the factors that influence household residential location. For instance, Oladapo et al. (2019) investigated factors influencing tenants' choice of location of residence in Bosso Local Municipality, Minna. The study used 277 copies of questionnaires for data collection and used factor analysis for data analysis. The results revealed that the determination of residential location of tenants is dwelling attributes (with 24.24% total variance), comprising the number of bathrooms, toilets, and bedrooms. The second principal component, named

accessibility attributes (with 16.48% total variance), plays a modest role, with proximity to a secondary school and/or primary school loading very high. The third principal component was neighbourhood dwelling attributes (with 11.30% total variance), while a fourth principal component named location of property (with 7.66% total variance). Oshikoya and Ifediora (2021) investigated housing choice determinants in Ibadan using a descriptive survey design, with data obtained from 56 valid copies of the questionnaire administered in low and medium-density residential areas. The findings revealed that security and low crime rate were the most significant factors influencing housing choice (Mean = 3.80), followed by monthly income **(**M = 3.54**),** indicating the importance of safety and affordability. Locational factors such as environmental quality (M=3.46) and proximity to workplace **(**M=3.38) also significantly influenced residential decisions. Additionally, regular electricity supply **(**M = 3.21) and mobile network availability **(**M=3.07**)** emerged as key infrastructural determinants. The study concludes that housing choice in Ibadan is shaped by security, income level, location, environmental quality, and access to essential services.

Gomaa (2022) investigated the socio-economic factors influencing housing location choices using a multinomial logit model, analyzing data from 3,308 urban households in Florida. The study identified that 25.8% of households chose locations based on "other reasons," followed by neighborhood quality (19.6%) and convenience to work (13.7%). Household income significantly influenced location choice, with high-income households prioritizing school system quality and work proximity over housing cost. Household race was a key factor, with white households more likely to select locations based on home size and quality, while household size and vehicle ownership also influenced preferences. Single-family homeowners were more focused on home size and neighborhood quality, while apartment dwellers prioritized housing cost. The final model, with 3,308 observations, showed strong explanatory power, highlighting the importance of socioeconomic factors in shaping residential preferences. Kwanga and Dam (2024) investigated factors influencing the location of intra-urban residential choices in Makurdi metropolis using factor analysis to analyze data collected from 328 respondents across the 20 major neighbourhoods of Makurdi metropolis. Findings revealed that factors such as the presence of friends, the cost of rent, security in the neighbourhood, and the presence of kin, office location, and adequate potable water supply, family size, easy means of transport, nearness to recreational centres, and the presence of a desired house positively and significantly influenced the choice of housing location by the residents.

2 Materials and Methods

2.1 Study Area

The Federal Capital Territory (FCT) of Nigeria is geographically located between latitudes 8°51′N and 9°09′N of the Equator and longitudes 7°15′E and 7°33′E of the Greenwich Meridian. The Abuja Municipal Area Council, positioned and occupies a strategic central location within Nigeria. It shares boundaries with Bwari Area Council to the north, Gwagwalada to the west, Kuje to the south, and Nasarawa State to the southeast (see Figure 1). AMAC itself spans an estimated 1,476 to 1,800 square kilometers (Kabiru, 2024).

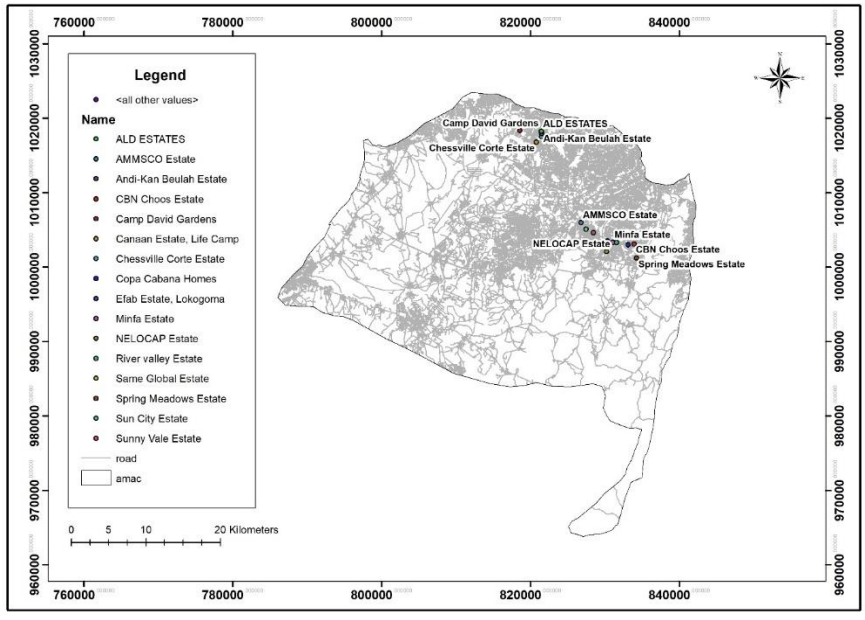

Figure 1: Map of the study area
Source: Modified from the Administrative Map of Nigeria

2.2 Data Source

The study was conducted in Abuja, focusing on the Abuja Municipal Area Council, a major hub of PPP housing estates. A quantitative cross-sectional survey design was adopted. The population comprised 6,170 occupied housing units across 14 PPP housing estates, from which a sample of 400 households was determined; 357 valid responses (89.3%) were analyzed. A multistage sampling approach was employed, involving purposive sampling in selecting PPP housing estates and systematic random sampling (every 16th housing unit) in selecting households for questionnaire administration.

2.3 Data Analysis

Data were collected through structured questionnaires and supported with secondary sources. Validity was ensured through expert review and pilot testing, while reliability (Cronbach's Alpha > 0.70) confirmed internal consistency. Data were analyzed using descriptive statistics, KMO and Bartlett's tests, and Principal Component Analysis with Oblimin rotation, retaining factors with eigenvalues > 1 and loadings ≥ 0.40. Oblimin rotation was used because the study expected the housing location determinants to be interrelated rather than completely independent. For instance, factors such as affordability, household income, proximity to work, accessibility to services, and transportation convenience are conceptually linked and may influence one another in residents' housing decisions. This allows correlation among extracted components.

The general equation for Principal Component Analysis (PCA) can be expressed as:

$$PC_i = a_{i1}X_1 + a_{i2}X_2 + ai_3X_3 + \cdots + aipXp \quad (i)$$

Where:

- PC_i = the i^{th} principal component
- a_{ij}= the loading (weight or coefficient) of the j^{th} variable on the i^{th} component
- $X_1, X_2, X_3, \ldots, Xp$ = the standardized observed variables
- PPP = the total number of variables included in the analysis

3 Results

3.1 Socio-Economic Characteristics

The examination of the residents' socio-economic characteristics formed an integral part of this study. This is because, theoretically, housing location choice has been linked to the residents' socio-economic characteristics, and the results are presented in Table 1. Findings revealed that male respondents constituted 65.0%, while females accounted for 35.0% of the participants in the surveyed PPP housing estates. This underscores that men are still the major decision makers in terms of acquiring housing and the location of the house in the study area. This is the outcome of the socioeconomic and cultural systems in Nigeria, where men may take the lead on property ownership and on major financial decisions. This could also be a reflection of differential access to housing finance, employment, and property ownership among females and males. Men may have more economic power and access to mortgage facilities, which can lead to their greater involvement in PPP housing schemes, as such schemes may require significant capital outlays. This finding corroborates that of Oladapo et al. (2019), which found that 62.8 % of heads of the household reported in the investigated housing units were males. It also has implications for the Housing Need Theory that indicates that household structure, income, and socio-economic roles of the household members help to shape housing decisions, with the household head exerting a significant influence on both housing location and preference.

Age distributions generally determine the level of decision-making on housing choice. Findings show that 22.7% of the respondents fall within 48–52 years, 20.7% falls within 43–47 years, while smaller proportions were recorded for 63 years and above (3.2%). The predominance of respondents falls within 33 to 57 age brackets (cumulatively 77.8%), reflecting the economically active nature of residents in PPP housing estates. This is in line with the study of Oshikoya and Ifediora (2021), who observed a cumulative of 78.5% of respondents between 25 and 66 years of age. Marital status indicates that 82.6% of the respondents were married, while 12.1% were single. This distribution reflects the strong link between marriage and household responsibility in urban Nigerian settings, where married individuals are more likely to seek stable and formal housing to accommodate their families.

Table 1 Socio-Demographic Characteristics of Respondents

S/N	Variable	Characteristic	Frequency	Percentage (%)
1	Gender	Male	232	65.0
		Female	125	35.0
2	Age	18–27 years	13	3.8
		28–37 years	31	8.7
		38–47 years	119	33.3
		48–57 years	141	39.2
		58 years and above	54	15.2
3	Marital Status	Single	43	12.1
		Married	297	82.6
		Widowed	11	3.2
		Divorced/Separated	6	2.2
4	Educational Status	Non-Formal	3	0.8
		Primary	2	0.6
		Secondary	23	6.4
		Tertiary	329	92.5
5	Occupation	Civil Servant	97	27.2
		Business/Trading	112	31.4
		Private Employee	75	21.0
		Others	73	20.5
6	Income	Below ₦70,000	19	5.3
		₦71,000–₦120,000	58	16.2
		₦121,000–₦170,000	81	22.7
		₦171,000–₦220,000	39	10.9
		₦221,000–₦270,000	58	16.2
		₦271,000–₦320,000	38	10.6
		₦321,000 and above	64	17.9
7	Year of Residence	Less than 1 year	24	6.7
		1–5 years	211	59.1
		6–10 years	84	23.5
		11–15 years	35	9.8
		16 years and above	3	0.8
	Total		357	100.0

The educational status revealed that most of the respondents in the visited PPP housing estates were highly educated, with tertiary education dominating at 92.2%, this clearly indicated that PPP housing estates in AMAC predominantly attract highly educated residents, which significantly influences housing demand characteristics. The occupational distribution provides important insights into the socio-economic structure of residents within the PPP housing estates in AMAC. Findings revealed that business/trading constitutes the largest occupational group (31.4%), while civil servants constitute the second largest group (27.2%). This distribution reflects the highly urbanized nature of AMAC and has significant implications for PPP housing demand, location preference, and estate planning. This finding correlates with This finding align with Oladapo et al. (2019), who observed that occupation components of the sample are almost equally distributed between government employees (28.5%).

The income distribution provides critical insight into the affordability structure and socio-economic composition of residents within PPP housing estates in AMAC. Findings show that only 5.3% of respondents earn below the national minimum wage benchmark of ₦70,000 per month, while a significant proportion earn well above this threshold. Notably, 22.7% earn between ₦121,000 and ₦170,000, 16.2% fall within ₦221,000–₦270,000, and 17.9% earn ₦321,000 and above. This indicates that more than half of the respondents earn above ₦200,000 monthly, indicating a predominantly middle- and upper-income resident population. The years of residence revealed that a substantial proportion of respondents are long-term residents, with nearly half (47.1%) having lived in their housing units for 6–10 years. When combined with those who have resided for 11–15 years (11.8%) and 16 years and above (1.4%), it shows that over 60% of the respondents have lived in the study area for more than six years. This indicates a relatively stable residential population who are well informed about the housing conditions over time.

3.2 Factors Influencing Housing Location Choice

Based on the analysis presented in Table 4.2, a mean score ranking was conducted to assess the factors influencing housing choice among residents. Findings revealed that the most influential factor that influenced the choice of housing location was safety and a secure environment, with the highest mean of 4.24. This underscores the fact that secured residential environments were the priority for residents in their housing location choices; it implies that housing location choice is not only considered in relation to geographical location, but also in relation to its perceived environmental security as something that increases the perception of residents of safety and quality of life. The fact that safety and security are the top determinants in housing location preference in PPP housing estates in AMAC is greatly supported by the findings of Oshikoya and Ifeodiora (2021) and Kwanga and Dam (2024), who indicated that security considerations had always ranked top as far as housing location choice in urban Nigeria, especially in planned estates.

Table 2: Factors Influencing Housing Location Choice

S/N	Influencing Factors	S.D	D	U	A	S.A	Mean	Rank
1	Accessibility to schools, healthcare, and the market	3	40	2	205	107	4.04	3rd
2	Affordability in terms of purchase or rent	53	81	28	125	70	3.22	10th
3	Availability of basic facilities	3	37	28	171	118	4.02	4th
4	Commuting time and transportation	21	49	44	134	109	3.73	7th
5	Household income level	10	58	28	191	70	3.71	9th
6	Location/site of the PPP housing estate	0	20	9	231	97	4.13	2nd
7	Proximity to work	15	38	39	167	83	3.73	7th
8	Repair and maintenance of housing facilities	11	47	30	183	86	3.80	6th
9	Types of building (materials and design)	15	39	18	201	84	3.87	5th
10	Safety and secure environment	6	9	22	178	142	4.24	1st

The location or site of the PPP housing estate ranked second, with a mean score of 4.13, indicating that the physical siting of housing developments significantly influences residents' housing preferences. This underscores the importance of strategically located estates that offer proximity to places of work, commercial centres, and other urban services, thereby reducing daily commuting stress and enhancing residents' convenience. The finding reinforces the long-established view that location remains a fundamental determinant of housing choice in urban areas, particularly in rapidly expanding cities such as Abuja. This result is consistent with the findings of Gomaa (2022), who observed that households showed a strong preference for location-based factors (25.8%) over other determinants of residential choice decision-making. In contrast, economic factors such as the level of household income and affordability were ranked relatively lower among the determinant factors for housing choice. Household income ranked 9th (mean = 3.71), while affordability in terms of purchase costs or rentals ranked 10th (mean = 3.22). This would imply that the residents of the PPP housing estates in the AMAC area prioritize factors concerning safety, accessibility features, and the availability of basic facilities over economic factors in choosing appropriate housing options. It may also mean that the residents perceive the PPP housing options as meeting the minimum affordability criteria, which might reduce the need for economic factors as major considerations in the choice of appropriate housing.

However, mean score ranking alone does not account for interrelationships among variables and may treat correlated factors as independent. To overcome this, factor analysis was adopted. Factor analysis further complements the mean score ranking in order to overcome this limitation of providing a deeper and more analytical understanding of housing choice behavior. Factor analysis helped to reduce the data into a smaller set of latent constructs, thereby uncovering the underlying dimensions that explain the observed rankings. In this way, factor analysis complements mean score ranking by moving beyond descriptive importance to a more robust and parsimonious explanation of the housing choice factors.

3.3 Factor Analysis

Table 3 presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity to check the interrelationships among variables. The KMO value was 0.785, indicating that the sample size and the correlation patterns among variables were appropriate for factor extraction. Bartlett's Test of Sphericity produced a Chi-square value of 984.250 with 45 degrees of freedom, which was statistically significant at $p < 0.001$, thereby confirming that sufficient inter-variable correlations existed in justifying the application of factor analysis for this study.

Table 4.3: KMO and Bartlett's Test

Test	Statistic	Value
Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy		0.785
Bartlett's Test of Sphericity	Approx. Chi-Square	984.250
	df	45
	Sig.	0.000

Table 4 presents Principal Component Analysis (PCA) in identifying the underlying structure of housing location choice determinants. It revealed that three components had eigenvalues greater than 1, following Kaiser's criterion. These three components explained a total variance of 60.79% in the dataset. Specifically, the first component accounted for 36.75%, the second for 12.81%, while the third accounted for 11.23% of the variance. After rotation, the variance was redistributed across the three components, with Component 1 contributing 31.56%, Component 2 contributing 17.94%, and Component 3 contributing 20.94%. Rotation, therefore, enhanced interpretability while maintaining the same overall explanatory power. Components 4 to 10 had eigenvalues less than 1 and were not retained, as they explained minimal variance. The decision on the number of factors to retain was guided by the Total Variance Explained (TVE). Accordingly, since each variable was expected to have a variance of 1, factors with a variance less than 1 were no better than a single variable and were therefore not retained. Three components with eigenvalues greater than 1 cumulatively accounted for 60.794% of the total variance. This indicates the first three factors were retained for further interpretation and rotation, as they provided both a statistically and visually justified justification.

Table 4: Total Variance Explained (TVE)

Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %	Rotation Sums of Squared Loadings Total
1	3.675	36.750	36.750	3.675	36.750	36.750	3.156
2	1.281	12.813	49.563	1.281	12.813	49.563	1.794
3	1.123	11.231	60.794	1.123	11.231	60.794	2.094
4	0.863	8.627	69.422				
5	0.774	7.745	77.166				
6	0.660	6.600	83.766				
7	0.500	5.000	88.766				
8	0.397	3.969	92.735				
9	0.378	3.783	96.517				
10	0.348	3.483	100.000				

The Scree Plot (see Figure 2) further supported this decision, as a clear inflection point was observed after the third component, where the curve begins to flatten. This is also known as the "elbow," indicating the point at which additional factors contribute little explanatory power.

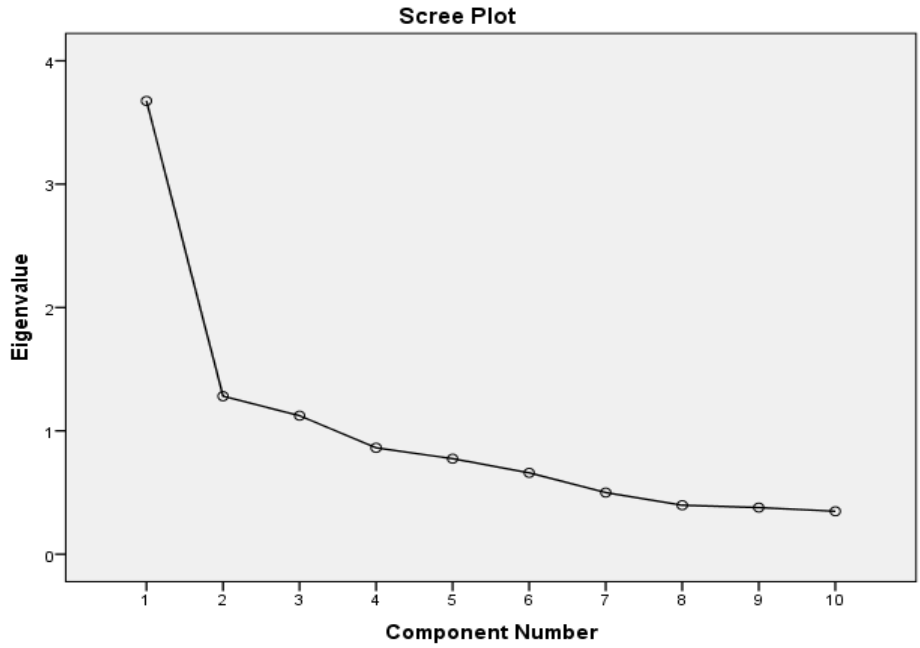

Figure 2: Screen Plot

The results of the rotated pattern matrix shown in Table 4.5 revealed the three distinct components representing the underlying dimensions of housing location choice. The first component had high factor loading for proximity to work (.831), commuting time and transportation (.765), household income (.647), affordability (.641), safety and security (.505), and accessibility to schools, healthcare, and markets (.482). This result agrees with the findings of Aliyu et al. (2018), Oshikoya and Ifediora (2021), and Eyinla (2024), who found that income level, accessibility, transportation convenience, and neighbourhood security are important factors in residential choice. The finding is also consistent with the Housing Need Theory that has been suggested by Rossi (1955), which states that households always make adjustments in their housing requirements as they change their socioeconomic circumstances, family size, and lifestyle aspirations. The high loading on the proximity to work and commuting factors indicates that residents are concerned about minimizing transportation stress and transportation expenses in an urban environment in Abuja. Likewise, the presence of household income and affordability suggests that people make decisions about housing within the means of their household budgets. The relatively low influence of affordability under component 1 (.641) might relate to the fact that the cost of housing in Abuja has been increasing, inflationary pressures, the high value of land, and construction costs of the PPP housing scheme. For many residents, access to jobs and transportation convenience can be more important than affordability; the proximity to jobs helps to lower daily transportation costs and travel time. Further, lack of access to affordable mortgages and low incomes may diminish the importance of affordability in the housing choice decision-making process, as well as a lack of financing mechanisms for low-income earners. It is consistent with the findings of Glaeser and Gyourko (2018), who point out that housing decisions are not solely a matter of housing supply, but also of market realities like income restrictions and location choice.

Table 5: Rotated Pattern Matrixa Components

Variables	Component 1	Component 2	Component 3
Proximity to work	0.831		
Commuting time and transportation	0.765		
Household income level	0.647		
Affordability in terms of purchase or rent	0.641		
Safety and secure environment	0.505		
Accessibility to schools, healthcare, and the market	0.482		
Types of building (materials and design)		0.872	
Location of the housing estate		0.714	
Availability of basic facilities (water, electricity, etc.)			0.791
Timely repair and maintenance service			0.714

The second component had high factor loadings for types of building/materials (.872) and location of the housing estate (.714). This suggests that homeowners have a strong sense of the physical quality, beauty, and layout of houses. The findings corroborate Aliyu et al. (2018), who noted that the quality of the environment and the housing features have a significant impact on preference for neighbourhood. It also reflects the assumptions of the Principal Agent Theory, which focuses on the role of private developers as the agents in providing quality housing for the government as the principal (Fatile et al., 2015). In Abuja, it seems the ability of private developers to deliver quality housing development is judged by the quality of building materials, housing design, and estate planning in PPP housing schemes. This means that the monitoring and compliance with construction standards are critical in achieving satisfaction among the beneficiaries of the PPP housing projects.

Basic amenities and service quality (.791) had strong loadings with availability of basic facilities like water and electricity, and timely repair and maintenance services (.714). This finding shows that quality infrastructure and maintenance services continue to be important factors in satisfaction with housing and residential choice. This finding supports that of Mekebo and Dong (2021), who suggested that households are dissatisfied and will want to move when their basic housing requirements are not met. The discovery also validates the Housing Need Theory, which focuses on the importance of housing satisfaction as being more than just a place to live, but also a sense of security, comfort, and having access to services that are required to carry out daily activities. Residents in Abuja's PPP housing schemes seem to place a high priority on houses that ensure a stable power supply and maintenance, as these factors are closely linked to their overall quality of life and satisfaction.

4 Conclusion

This study examined the factors that influenced the location choice of houses under the Public-Private Partnership (PPP) housing scheme in AMAC. The three components that emerged from the factor analysis accounted for 60.79% of the total variance in people's housing preferences: they had eigenvalues of 1 or more. Socioeconomic and locational accessibility proved to be the most significant one, explaining 36.75% of the variance, while housing structure characteristics and basic amenities/service quality explained 34.25% and 11.87% of the variance, respectively. What mattered most were: working distance, convenience of commuting, price, income, house features, infrastructure, and maintenance. The results indicate that socioeconomic accessibility, housing quality, and infrastructural services influence the housing choice under PPP schemes, not only in isolation but also jointly. The results also confirm the Housing Need Theory and Principal Agent Theory because they show that residents' housing preferences can be affected by socioeconomic needs, accessibility requirements, and the housing provided by private developers under government supervision.

The study recommends that future PPP housing projects in AMAC should prioritize accessibility to employment centres or work places, transportation networks, schools, healthcare facilities, and markets, since these factors recorded the strongest influence on residential choice. GIS-based spatial suitability mapping should be used to combine the determinants identified (accessibility, availability of infrastructure, affordability, and environmental safety) for housing site selection and land allocation decisions by policymakers and developers. This would foster more balanced urban development, relieve the commuting burden, and increase residents' satisfaction. The study further suggests that the infrastructure and maintenance standards of PPP housing policies should, in addition to flexible housing finance mechanisms, include enforceable infrastructure and maintenance standards to facilitate sustainable housing delivery at different income groups, to enhance affordability.

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