

Critical Success Factors for Affordable Housing Projects in Nigeria

Musa Mohammed Mukhtar^{1*}, Abdullahi Nafiu Zadawa¹, Muhammad Jamil Abubakar²,
Mukhtar Adamu Dandajeh¹, Auwalu Sani Shehu¹

¹Department of Quantity Surveying, Faculty of Environmental Technology, Abubakar Tafawa Balewa University Bauchi, Bauchi State, Nigeria

²Department of Quantity Surveying, Faculty of Environmental Science, Federal University Birnin Kebbi, Kebbi State, Nigeria

*Corresponding author's email: mmmukhtar99@gmail.com

Article history: Received: 19 May 2023 Received in revised form: 8 October 2023

Accepted: 24 October 2023 Published online: 31 December 2023

Abstract

Housing plays an important role in socio-economic development of any country. However, access to affordable housing is a challenge to many people in developing countries. The purpose of this study is to establish critical success factors for affordable private sector housing projects in Nigeria. Twenty-six (26) success attributes for affordable housing were identified from literature. A survey questionnaire was designed, and pre-tested, subsequently main survey was performed in which two hundred and eighty (280) questionnaires were administered to experienced researchers, senior managers in public housing agencies, developers and consultants with knowledge and experience in affordable housing. One hundred and seventy-six (176) completed questionnaires were returned completed representing 62.86% response rate. The data collected were analyzed using mean score, factor analysis and stepwise multiple regression analysis. The findings from this study produce four critical success factors for affordable housing projects namely, effective land policies for affordable housing, availability of effective financial institutions, good governance of housing systems, and political will. The results suggested that a well-functioning housing sector must satisfy these factors. It has been concluded that, government has an important role to play in the supply of affordable housing in Nigeria. Thus, government should be committed to supporting affordable housing development through the provision of policy solution and implementation. The study can assist policy makers to understand important factors that influence the success of affordable housing development, and thus include them in the formulation of housing policies in their countries.

Keywords: Affordable housing, Critical success factors, Nigeria, Low-income earners, Questionnaire survey

© 2023 Penerbit UTM Press. All rights reserved.

1.0 INTRODUCTION

The International Covenant on Economic, Social and Cultural Rights (article 11.1) recognized among others, the right of everyone to adequate housing. Adequate housing is housing that have security of tenure, with availability of services such as safe drinking water, sanitation and infrastructure, it is affordable, habitable, durable, accessible to people without discrimination, sited in good location with easy access to social amenities and depict cultural heritage of the occupants (UN Habitat, 2021). Affordable housing is broadly defined as that which is adequate in quality and location and does not cost so much that it prohibits its occupants meeting other basic living costs or threatens their enjoyment of basic human rights (household spends less than 30% of their income on housing related expenses, such as mortgage repayments) (UN Habitat, 2011). Adequate and affordable housing play an important role in creating employment and improving the health and general well-being of low-income earners. Generally, it promotes economic and social inclusion, digital access, personal safety and security, and healthy environments (UN Habitat, 2021). If affordability problems are not adequately addressed there will be profound social and economic consequences for our communities and future generations (Mulliner and Malien, 2013). However, access to adequate and affordable housing poses a serious challenge in most developing countries, due to the fact that housing is expensive, and incomes are too low (Nzau and Trillo, 2020). A vast number of households in developing countries live in indecent housing in slums and informal settlements, in overcrowded conditions, with insecure tenure, in unsafe or inaccessible locations because they cannot access better quality housing at affordable prices (UN Habitat, 2018). Anacker (2019) noted that, housing affordability and affordable housing challenges affect families' financial plan. Households pay high percent of their income for housing, leaving less amount for the payment of other basic necessities of life such as foods, health care, transportation, and child upbringing expenses, etc. These challenges may affect the quality of life of the households.

Rapid urbanization and population growth in Nigeria have created large demand pressure on the provision of affordable housing particularly in urban areas (Adedeji et al., 2023). Anacker (2019) opined that, housing affordability may be a challenge in society with rising demands for housing due to population growth and immigration. Thus, Nigeria with an average population growth of 2.5%, its citizens face critical challenge in access to decent and affordable housing (Shobowale, 2023). The challenges that hinder affordable

housing development in Nigeria includes non-accessibility of long-term loan for housing development, difficulties in accessing land with secure tenure, high cost of building materials, limited skills manpower, and poor conditions of infrastructure (Mukhtar et al., 2016; Adedeji et al., 2023). According to International Human Rights Commission (IHRC), more than 28 million Nigerians lack access to decent and affordable housing (Shobowale, 2023). Earlier, Moore (2019) reported that only 10% of Nigerian who desire to own a home can afford it. Despite successive governments' efforts to address housing challenges in the country, little success has been recorded (Mukhtar et al., 2017; Adedeji et al., 2023). Generally, government alone cannot solve the problem of affordable housing in Nigeria, there is need for participation of private sector.

Thus, the aim of this study is to establish critical success factors (CSFs) for affordable private sector housing development for low- and medium-income households in Nigeria. The low-income group in Nigeria is defined as all persons whose annual income exceeds 25% of the National Minimum wage but does not exceed the National Minimum Wage (annual income $> \text{USD } 120 \leq \text{USD } 480$). Whereas the lower-medium income group is defined as all persons whose annual income exceeds the National Minimum Wage but does not exceed four times the National Minimum Wage (annual income $> \text{USD } 480 \leq \text{USD } 1920$) (FMWH, 2011). Presently the approved minimum wage in Nigeria is 30,000 naira (USD 40) per month which is equivalent to 360,000 naira (USD 480) per annum. Identification of CSFs is important because Pinto and Covin (1989) opined that, the presence or absence of many CSFs can result in success or failure of a project. Similarly, Chan et al. (2004) asserted that, the effectiveness of project can be improved by studying its CSFs. However, limited studies investigated CSFs for affordable housing, and those studies were carried out in overseas. Toor and Ogunlana (2009) noted that study of CSFs is situational and context specific, and the findings can only be applied in the country where the study was carried out. In addition, most of the previous studies on housing (Ebekozen et al., 2022; Chiwuzie and Dabara, 2021; Ezennia, 2022) focused their attention on identifying the challenges facing housing sector in Nigeria, limited studies if any were carried out to explore factors that influence the success of affordable private sector housing projects in Nigeria. Thus, the gap identified motivated the researchers to conduct this study to identify CSFs for affordable private sector housing projects in Nigeria. Essentially, private sector can play significant role in the supply of affordable housing projects if certain conditions are met. The study is set to answer the following question: What are the critical success factors for affordable private sector housing projects in Nigeria? This study contributes to the body of knowledge by establishing CSFs for affordable private sector housing projects in Nigeria.

■ 2.0 LITERATURE REVIEW

2.1 Critical Success Factors for Affordable Housing Projects

Moghayedi et al. (2021) described affordability as “anything that is able to bear cost with no dire consequences”. Generally, the meaning of the term “affordable” is subjective and depends on the contexts and individual views. Because of this there is no consensus on the definition of the term “affordable housing” (Carswell, 2012). Studies have shown that housing affordability is influenced by a number of factors that includes increasing demand of housing due to population growth or immigration, household income, households' expenditure in relation to income, and lack of government programmes towards affordable housing. Others are decreasing housing supplies due to insufficient construction, availability of housing finance, cost of land acquisition, design, approval process, and construction (Anacker, 2019; Moghayedi et al., 2021). Various measures were used by different researchers to measure housing affordability. However, this study adopts the definition of affordable housing by UN Habitat (2011) that affordable housing is one which is adequate in quality and location and does not cost so much that it prohibits its occupants meeting other basic living costs or threatens their enjoyment of basic human rights (household spends less than 30% of their income on housing related expenses, such as mortgage repayment) as presented in Table 1. On the other hand, the term critical success factors have several definitions in literature, but the most frequently cited definition is that of Rockart (1982), who defined it as those few tasks or events whose promising outcomes are certainly necessary for the achievement of project goals. Similarly, Pinto and Slevin (1987) considered CSF as certain factors that if addressed properly can highly influence project implementation success. Thus, CSFs for affordable housing can be defined as those few tasks, conditions or circumstances that influence the achievement of housing affordability.

Shah et al. (2022) conducted a study to explore CSFs for affordable housing projects: the study established that policy and political will, land and planning process, well established financial institutions and financing aspects, sustainability dimensions, design and specification details, authorizations, procedures and approvals, effective project management and value engineering, as well as facilities management are the CSFs for affordable housing projects. Morale (2006) established CSFs for affordable housing as community support, clarity defined goals, appropriate design, financial market conditions, tax benefits, experienced project manager, and experienced project team members. Almi and Husin (2017) classified success factors for housing delivery system in Malaysia into financial factors, economic, environmental, and social factors, project management factors, communication factors, enforcement factors and legislative factors. Youneszadeh et al. (2017) developed a framework to evaluate critical success factors for urban housing projects. The framework consists of 16 critical success factors which were categorized into four groups namely, projects specification factors, organization related factors, project team factors, and external environmental factors. According to UN Habitat (2011, 2021) strategies that will facilitate affordable housing delivery includes: increasing supply of subsidized land with secure tenure, increasing access to affordable well-located serviced land, provision of infrastructure to land by government, reviewing regulatory framework for land development, effective institutional framework for land management, regulatory framework to formulate planning standards, efficient land administration, good governance, forming PPP for housing development, creating incentive to encourage private sector investment in the housing sector, formulating policies to promote production and use of appropriate affordable building materials, promoting research and development into innovative technology, training skilled workers in the informal housing sector, promotion of energy efficient design, and access to housing finance.

Other studies considered aspect of sustainability in their studies. For instance, Adabre and Chan (2019) identified 13 CSFs for sustainable affordable housing which includes availability of loan at low interest rate for housing development, supply of serviced land at affordable cost by government, government support and commitment to affordable housing, formulation of sound housing policies, available and accessible social amenities, good location for housing development, monitoring conditions of completed houses, provision of housing subsidies to low and medium income households by government, adherence to project schedule, provision of adequate

infrastructure by government, availability of incentives for developers to provide affordable housing, policy for inclusion of affordable features in housing projects by developers, transparency in housing allocation. Kineber et al. (2021), explored the value management critical success factors for sustainable residential building in Egypt. The study classified the CSFs into four components namely, culture and environment, standardization, stakeholders and knowledge, and workshop dynamic. Oluleye et al. (2021) established critical success factors for sustainable housing delivery in Nigeria as provision of adequate funding by government, access to low interest mortgage, community participation, stakeholders' involvement, safety, use of sustainable building materials and components, adaptable housing design and efficient land use. Oyebanji et al. (2017) presented the critical success factors for sustainable social housing as provision of sufficient funding, affordability, adequate financial planning, appropriate construction technology, efficient land use planning, suitable housing design, safety, use of environmentally friendly materials, environmental protection, and availability of social services. Based on the review of previous studies on affordable housing 26 success factors were identified as presented in Table 2.

Table 1 Housing affordability measures

Item	Measures of Housing Affordability	Literature Sources
1	Quality of the housing	UN Habitat (2011)
2	Good location	UN Habitat (2011)
3	Percentage of household income spent on housing related expenses (< 30% of household income)	UN Habitat (2011)

Source: Literature Review

Table 2 Success factors and affordability measures for adequate and affordable housing projects

Item	Success Factors	Literature Sources
1	Supply of low-cost land with secure tenure by government	UN Habitat (2011, 2021), Adabre and Chan (2019)
2	Access to affordable well-located serviced land	UN Habitat (2011, 2021), Adabre and Chan (2019)
3	Provision of infrastructure to land by government	UN Habitat (2011, 2021), Adabre and Chan (2019)
4	Good land policies	UN Habitat (2011, 2021), Shah et al. (2022)
5	Effective institutional framework for land management	UN Habitat (2011, 2021), Shah et al. (2022)
6	Good governance	UN Habitat (2011, 2021)
7	Forming PPP for housing development	UN Habitat (2011, 2021)
8	Governments guarantees to developers	UN Habitat (2011, 2021)
9	Promoting research and development into innovative technology	UN Habitat (2021)
10	Training skilled workers in the informal housing sector	UN Habitat (2021)
11	Promotion of energy efficient design	UN Habitat (2011, 2021)
12	Government support and commitment to affordable housing	UN Habitat (2011, 2021), Adabre and Chan (2019), Shah et al. (2022)
13	Formulation of sound housing policies	UN Habitat (2011, 2021), Adabre and Chan (2019), Shah et al. (2022)
14	Appropriate design	UN Habitat (2011, 2021), Adabre and Chan (2019), Morale (2006), Shah et al. (2022), Oyebanji et al. (2017), Oluleye et al. (2021),
15	Effective project management	Adabre and Chan (2019), Shah et al. (2022)
16	Using suitable local building materials	Shah et al. (2022), UN Habitat (2011),
17	Stable macro-economic environment	UN Habitat (2011)
18	Availability of credit facilities	UN Habitat (2011, 2021), Adabre and Chan (2019), Shah et al. (2022), Oluleye et al. (2021)
19	Low interest rate housing loan	UN Habitat (2011, 2021), Adabre and Chan (2019), Oluleye et al. (2021)
20	Long term loan repayment period	UN Habitat (2011, 2021)
21	Low down payment requirement	UN Habitat (2011, 2021)
22	Government support to local building materials industry	UN Habitat (2011, 2021), Adabre and Chan (2019)
23	Adaptable housing design and construction	Adabre and Chan (2019)
24	Mixed land development	Adabre and Chan (2019)
25	Taxation on property for housing supply	Adabre and Chan (2019), Morale (2006)
26	Provision of incentives to developers	Adabre and Chan (2019), UN Habitat (2021)

■3.0 METHODOLOGY

3.1 Method of Data Collection

The study was conducted in three out of the six geographical zones of Nigeria and opted for quantitative approach. Two states were randomly selected from each of the three zones, and these comprises of Kaduna State and Kano State from north-west, Bauchi State and Gombe State from north-east, Niger State and Nasarawa State from north central. Initially an extensive review of relevant literature was conducted in order to identify success factors for affordable housing projects. This led to the identification of twenty-six (26) factors as presented in Table 2. The list of the factors was validated by six experts in the housing sector (two academics and four practitioners) to ascertain that the factors were comprehensive and relevant to Nigerian context as well as to ensure the appropriateness of the wordings, after minor modifications a draft questionnaire was designed. The study employed survey questionnaire as an instrument for data collection. According to Munn and Drever (1990), questionnaire is an efficient means of collecting information from a large number of people. It saves time, and there is possibility of a high return rate. The questionnaire for this study consisted of closed ended questions and comprised of two sections. The first section contained questions about the respondents' demographic information. The second section comprised questions on the 26 success factors (independent variables) identified from the literature as well as the three criteria for measuring affordable housing (dependent variables) as presented in Table 2 and Table 1, respectively. The target respondents comprised academics (experienced researchers on affordable housing), developers, policy makers (senior managers in public housing agencies) and consultants (architects, quantity surveyors, and engineers) with knowledge and experience in affordable housing. Respondents were asked to indicate their views on the importance (influence) of the success factors towards achieving affordable housing in Nigeria using five-point Likert Scale, where 1 represents not important factor and 5 represents very important factor. The respondents were also asked to assess the importance of the three criteria in measuring affordability of housing projects in Nigeria using the same scale. This approach was adopted by previous similar studies (Adabre and Chan, 2019; Mukhtar and Mustapha, 2019).

A pilot study was conducted with 25 experienced academics, developers, and construction professionals who work in organizations related to housing development. The aim was to ensure that the questions asked were clear and comprehensive as suggested by Munn and Drever (1990). Subsequently, the main questionnaire was developed. A questionnaire survey was carried out in which 280 self-administered questionnaires were distributed in person to the accessible target respondents. The sample was selected using non-probability sampling technique (purposive sampling technique) as there was no sample frame that can be used. Creswell (2012) asserted that, where no sample frame exist a researcher can select individuals based on their availability if they represent some characteristics the research needs to study. A total of 176 questionnaire were completed and returned representing 62.86% response rate. This could be regarded as high compared with previous response rate obtained from similar study (Adabre and Chan, 2019).

3.2 Method of Data Analysis

The analysis of the data was performed using Statistical Package for Social Science (SPSS) software version 20.0. The statistical techniques employed were mean score with normalization and factor analysis. The normalized values were calculated using the following formula (1):

$$\text{Normalized value} = (\text{mean} - \text{minimum mean}) / (\text{maximum mean} - \text{minimum mean}) \quad (1)$$

Normalized value ≥ 0.50 indicates that the success attribute is critical. Subsequently, the identified critical success attributes were grouped into factors by means of factor analysis. This method was adopted by previous studies (Osei-Kyei and Chan, 2017; Adabre and Chan, 2019) to determine critical success factors. Stepwise multiple regression was also employed to determine the relative influence of factors extracted from factor analysis on affordability of housing projects. This approach was used in a similar study by Chan et al. (2001). Prior to the factor analysis and stepwise multiple regression analysis, the data collected were screened for potential missing data, outliers and normality as suggested by Hair et al. (2009). No unilateral outliers were found as the standardized scores for each case were within the acceptable range of ± 2.96 . Moreover, the data were also found to be normally distributed because their Test Statistics of Skewness and Kurtosis were within a range of ± 1 and ± 2 respectively as suggested by Hair et al. (2009). In addition, no case of missing data was found.

■4.0 RESULTS

4.1 Respondents' Profile

Table 3 presents summary of respondents' background. The Table shows that, 19.89% of the respondents were academics/researchers, 38.06% developers, 17.05% senior managers who work in public housing agencies/ministries, and 25.00% consultants (construction professionals). In terms of academic qualifications, the results indicated that most of the respondents possess high academic qualifications as 74.44% possess at least bachelor's degree and above, and 25.56% hold Higher National Diploma in relevant field. The Table also reveal that, majority of the respondents (82.95%) have more than 10 years of experience in either research or development of affordable housing. Therefore, considering their positions, academic qualifications, and experiences the respondents were eligible to provide reliable information.

Table 3 Summary of the respondents' background

Respondents' Background	Frequency	Percentage
Organisations/Positions		
Academics/researchers	35	19.89
Developers	67	38.06
Public agencies (Senior Managers)	30	17.05
Consultants	44	25.00
Total	176	100
Highest Academic Qualification		
HND (Higher National Diploma)	45	25.56
B.Sc. (Bachelor Degree)	84	47.73
M.Sc. (Master Degree)	28	15.91
Ph.D. (Doctorate Degree)	19	10.80
Total	176	100
Years of Experience		
1-5 years	8	4.55
6-10 years	22	12.50
11-15 years	39	22.16
16-20 years	78	44.32
More than 20 years	29	16.47
Total	176	100

4.2 Ranking of the Success Factors for Affordable Housing

Table 4 presents the ranking of the 26 success factors for affordable housing based on the respondents' opinions. The results show that the mean scores range from 3.24 to 4.71, whereas all the standard deviations of the variables are less than 1, meaning that there is consistency agreement in the participants' responses. The top five attributes with highest scores in descending order of importance are: good governance, access to affordable well-located serviced land, availability of effective financial institutions, formulation of sound housing policies, and government support and commitment to affordable housing. Table 3 also indicates that only 21 success attributes have normalized values ≥ 0.5 , thus they were considered as critical success attributes and selected for factor analysis.

Table 4 Ranking of success factors for adequate and affordable housing

Item	Success Factors	Mean	SD	Normalization	Rank
1	Good governance	4.71	0.63	1.00	1
2	Access to affordable well-located serviced land	4.68	0.81	0.98	2
3	Availability of credit facilities	4.66	0.73	0.97	3
4	Formulation of sound housing policies	4.63	0.71	0.95	4
5	Government support and commitment to affordable housing	4.62	0.53	0.94	5
6	Stable macro-economic environment	4.60	0.94	0.93	6
7	Access to low interest housing loan	4.59	0.60	0.92	7
8	Appropriate design	4.55	0.85	0.89	8
9	Low down payment requirement	4.53	0.72	0.88	9
10	Supply of low-cost land with secure tenure by government	4.51	0.57	0.86	10
11	Long term loan repayment period	4.50	0.68	0.86	11
12	Provision of infrastructure to land by government	4.47	0.73	0.84	12
13	Good land policies	4.42	0.64	0.80	13
14	Effective project management	4.39	0.78	0.78	14
15	Effective institutional framework for land management and housing development	4.33	0.69	0.74	15
16	Using suitable local building materials	4.25	0.72	0.69	16
17	Forming PPP for housing development	4.19	0.93	0.65	17
18	Training skilled workers in the informal housing sector	4.15	0.79	0.62	18
19	Promoting research and development into innovative technology	4.07	0.63	0.56	19
20	Government support to local building materials industry.	4.03	0.76	0.54	20
21	Provision of incentives to developers	3.97	0.89	0.51	21
22	Governments guarantees to developers	3.68	0.68	0.30	22
23	Adaptable housing design and construction	3.64	0.73	0.27	23
24	Promotion of energy efficient design.	3.41	0.96	0.12	24
25	Taxation on property for housing supply	3.36	0.72	0.08	25
26	Mixed land development	3.24	0.67	0.00	26

4.3 Ranking of the Perceived Importance of Housing Affordability Measures

Table 5 presents the ranking of the three measures of housing affordability based on the respondents' opinions. The results show that the mean scores range from 3.98 to 4.68, meaning that they are all important criteria. Percentage of household income spent on housing related expenses (< 30% of household's income) was ranked as the most important criterion for measuring housing affordability.

Table 5 Ranking of housing affordability measures

Item	Success Factors	Mean	SD	Normalization	Rank
1	Percentage of household income spent on housing related expenses (< 30% of household's income)	4.68	0.74	1.00	1
2	Quality of the housing	4.56	0.89	0.83	2
3	Good location	3.98	0.65	0.00	3

4.4 Factor Analysis of Success Factors for Affordable Housing

To identify the underlying structure or grouping of the 21 success attributes, factor analysis was carried out through the SPSS FACTORS Program. Factor analysis is a statistical technique that is employed to determine underlying structure (factor grouping) among the variables in the analysis (Hair et al., 2009). A correlation matrix of the variables was calculated using the data collected from the questionnaire survey. The sampling adequacy and sphericity were estimated by means of Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity respectively as presented in Table 6. The KMO calculate whether there is multicollinearity in the data. The value should be > 0.5 for satisfactory factor analysis. The KMO value in this study is 0.744 suggesting that the data is appropriate for factor analysis. The Bartlett's Test of Sphericity estimates whether there are relationships between the variables. A p value < 0.05 indicates that there is relationship, thus it is worth to continue with factor analysis. In this study the value of the Bartlett's Test of Sphericity is 1453.46 with p = 0.001 hence it is worth to continue with factor analysis.

Table 6 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.744
Bartlett's Test of Sphericity	Approx. Chi-Square
	1453.46
	Df
	210
	Sig.
	0.001

Principal components analysis was performed to determine the factor structure of the variables. The results shown in Table 7 indicate that, seven factor solutions with eigenvalues exceeding 1 have been produced. These seven factors explain 65.09% of the variance in the data. The remaining factors together accounted for 34.91% of the variance.

Table 7 Total variance explained for CSFs of affordable housing

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.005	19.071	19.071	2.470	11.763	11.763
2	2.158	10.277	29.348	2.408	11.465	23.228
3	2.008	9.560	38.908	2.145	10.212	33.440
4	1.693	8.062	46.970	2.049	9.756	43.197
5	1.432	6.817	53.786	1.829	8.709	51.906
6	1.265	6.025	59.811	1.467	6.988	58.893
7	1.109	5.281	65.092	1.302	6.198	65.092
8	.721	3.436	68.527			
9	.712	3.390	71.918			
10	.679	3.234	75.152			
11	.644	3.065	78.217			
12	.609	2.898	81.115			
13	.556	2.648	83.763			
14	.535	2.549	86.312			
15	.516	2.459	88.771			
16	.474	2.258	91.029			
17	.429	2.043	93.072			
18	.397	1.891	94.963			
19	.384	1.828	96.791			
20	.363	1.727	98.518			
21	.311	1.482	100.000			

Extraction method: principal component analysis

Varimax rotation was employed in the factor grouping as presented in Table 8. The results indicate that each of the variables has been classified into only one factor, with loading greater than 0.5 on the corresponding factor. Therefore, the factor analysis suggests that the 21 critical success attributes can be grouped into seven main factors. The meanings of the factors were interpreted based on the attribute with highest loadings in each group as suggested by Hair et al. (2009). Thus, Factor 1 has been named availability of effective financial institutions, Factor 2, good governance of housing systems, Factor 3, effective project implementation, Factor 4, effective land policies for affordable housing, Factor 5, political will, Factor 6, favourable economic conditions, and Factor 7, use of local building materials.

Table 8 Rotated factor matrix (factor loadings) of success factors for affordable housing

Factor Attributes	Component						
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Availability of credit facilities	.790						
Access to low interest housing loan.	.764						
Low down payment requirement	.747						
Provision of incentives to developers	.744						
Good governance		.794					
Effective institutional framework for land management and housing development.		.763					
Formulation of sound housing policies.		.732					
Promoting research and development into innovative technology		.727					
Effective project management			.804				
Training skilled workers in the informal housing sector.			.777				
Government support to local building materials industry.			.760				
Good land policies				.825			
Access to affordable well-located serviced land.				.820			
Appropriate design.				.769			
Government support and commitment to affordable housing					.809		
Supply of low-cost land with secure tenure by government.					.712		
Provision of infrastructure to land by government.					.707		
Stable macro-economic environment						.821	
Long term loan repayment period.						.807	
Using suitable local building materials							.808
Forming Public Private Partnership (PPP) for housing development.							.716

Extraction Method: Principal Component Analysis.

Rotation method: varimax with Kaiser Normalization.

Rotation Converged in 10 iterations.

The internal consistency of the seven-factors, 21-items scale assessed by means of Cronbach's alpha indicated moderate to high reliability as shown in Table 9. The reliability coefficient of the full scale was also high (Cronbach's alpha = 0.83), indicating that the data collected for this study are reliable as suggested by Oliveira et al. (2019).

Table 9 Reliability statistics

Factors	No. of Items	Cronbach's α	Reliability grade
Factors 1	4	0.88	High
Factors 2	4	0.86	High
Factors 3	3	0.82	High
Factors 4	3	0.87	High
Factors 5	3	0.77	moderate
Factors 6	2	0.74	moderate
Factors 7	2	0.72	moderate

Factor 1: Availability of effective financial institutions

This factor accounts for 19.07% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 1 are: availability of credit facilities with the highest factor loading of 0.790, followed by access to low interest housing loan (.764), low down payment requirement (.747), and Provision of incentives to developers (.744).

Factor 2: Good governance of housing systems

This factor accounts for 10.28% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 2 are: good governance with the highest factor loading of 0.794, followed by effective institutional framework for land management and

housing development (.763), formulation of sound housing policies (.732), and promoting research and development into innovative technology (.727).

Factor 3: Effective project implementation

This factor accounts for 9.56% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 3 are: Effective project management with the highest factor loading of .804 followed by, training skilled workers in the informal housing sector (.777), and then government support to local building materials industry (.760).

Factor 4: Effective land policies for affordable housing

This factor accounts for 8.06% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 4 are: good land policies with the highest factor loading of .825, followed by access to affordable well-located serviced land (0.820), and then appropriate design (0.769).

Factor 5: Political will.

This factor accounts for 6.82% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 5 are: government support and commitment to affordable housing with the highest factor loading of .809, followed by supply of low-cost land with secure tenure by government (0.712), and then provision of infrastructure to land by government (.707).

Factor 6: Favourable economic conditions

This factor accounts for 6.03% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 6 are: Stable macro-economic environment with the higher factor loading of .821, followed by long term loan repayment period (0.807).

Factor 7: Use of local building materials

This factor accounts for 5.28% of the total variances between CSFs as shown in Table 7. The critical success factors attributes of factor 7 are: Using suitable local building materials with the higher factor loading of .808, followed by forming Public Private Partnership (PPP) for housing development (0.716).

4.5 Stepwise Multiple Regression of Critical Success Factors and Housing Affordability

In order to determine the influence of the success factors on affordability of housing project, stepwise multiple regression was carried out between the seven success factors as the independent variables and affordability of housing project as dependent variable using Regression Program. Cohen et al. (2003) suggested that stepwise multiple regression can be performed to determine the contributions of independent variables in predicting dependent variable. Seven success factors score for each respondent were determined by means of regression analysis in SPSS. These factor scores composed of collection of data for regression analysis. An entrance criterion that an F statistic must be significant at the level of 0.01 was set.

Table 10 presents the stepwise multiple regression results. Three factors were excluded from regression model because they failed the entrance criteria. The standardized regression coefficients of effective land policies for affordable housing (Factor 4), availability of credit facilities (Factor 1), good governance of housing systems (Factor 2) and political will (Factor 5) differ significantly from zero at $p \leq 0.05$. In total, 66.6% of the overall housing affordability variance was explained by these four factors. Effective land policies for affordable housing contributed significantly to prediction of overall housing affordability ($R^2 = 0.053$, $p = 0.01$), availability of credit facilities, good governance of housing systems, and political will accounted for 9%, 4.1% and 0.8% of variance in the overall housing affordability.

Table 10 Stepwise Multiple Regression of CSFs and housing affordability

Independent variables (Critical success factors)	Standardized Coefficients (β)	P	R^2	ΔR^2
Factor 4: Effective land policies for affordable housing	0.727	0.00	0.527	0.527
Factor 1: Availability of effective financial institutions,	0.302	0.00	0.617	0.090
Factor 2: Good governance of housing systems	0.204	0.01	0.658	0.041
Factor 5: Political will	0.096	0.07	0.666	0.008
Constant	4.011			

Note: Dependent variable is the affordability of housing project

5.0 DISCUSSION

The stepwise multiple regression results produce four factors (CSFs) that have significant influence on affordability of housing projects in Nigeria. The first CSFs for affordable housing are effective land policies for affordable housing. Land policies which include strategic planning and regulatory planning are important instruments in improving the capacity of housing systems to deliver affordable and adequate homes (UN Habitat, 2021). Some regulations are important to public health, whereas some which impose restrictions to the use of available land may increase the land prices which can affect affordability. Generally, good land policies are essentials to increasing supply of adequate housing and reducing the growth of new slums particularly in countries with rapid population growth like Nigeria. The policies should facilitate building affordable housing in well located land with easy access to services and facilities (water, supply, electricity supply, and sanitation) as well as access to social amenities (schools and hospitals and employment opportunities). The housing should be well designed to have adequate space, structural stability, guarantees safety to occupants and protect them from environmental hazards or other threats to health. This result is supported by UN Habitat (2011) which asserts that effective land policy can improve land governance, promote access to land and guide Africa's growing cities for long term sustainability. Whereas Shah et al. (2022) ranked 'land and planning process' as the second important CSFs for affordable housing projects.

The second CSFs based on results is availability of effective financial institutions. Generally, lack of sound housing finance system that provide access to credit facilities has been considered as one of the challenges to provision of affordable housing in developing countries such as Nigeria. It has been reported that, majority of households in developing countries (Nigeria inclusive) are low-income earners who cannot save money for housing development. Thus, availability of credit facilities is vital in addressing housing challenge. However, the rate of interest payable will determine the ability of a household to pay for the house purchased. The interest rate in Nigeria is relatively high, up to 22% in most cases with short term repayment period (2-5 years). If interest rate for housing loan is high, then low and middle-income earners may find it unaffordable. Moreover, the ability of a household to obtain housing loan is determine by his ability to meet for down payment requirement. High down payment requirement will limit housing affordability especially for lower- and middle-income households. Thus, availability of effective financial institutions is essential to the development of affordable housing. These finding is supported by previous studies. For instance, Shah et al. (2022) found role of financial institutions and funding aspect as the third ranked CSFs for affordable housing projects. Similarly, UN Habitat (2011) and Adabre and Chan (2019) opined that access to, and the cost of housing finance are critical to housing affordability.

The third CSFs is good governance of housing systems. Good governance can initiate a policy that will ensures effective functioning of various actors in the housing sector. It promotes good performance and standard through well-informed policies development and implementation. These enable housing system to deliver adequate and affordable housing. Effective institutional settings that govern the housing sector, policy formulation and policy implementation is essential in the development of affordable housing in Nigeria. Housing policy has direct and indirect impacts on the supply of adequate, decent, and affordable housing. Sound housing policy that refers to government actions in terms of legislation and program delivery can lead to an investment in both private and public housing. The result is in line with previous studies. UN Habitat (2021) stressed the importance of good governance in achieving affordable housing, as it shapes the efficient use of land, capital, and expertise. In addition, Mukhtar et al. (2017) found availability of effective institutional framework that regulates and manages the activities of housing sector as critical factor to the success of public housing projects in Nigeria.

The fourth CSFs is political will. It is really important for government in Nigeria to be committed to affordable housing development, by formulating and implementing various policies and programs that address affordable housing. This finding is supported by Shah et al. (2022) who ranked 'policy and government support' as the most important CSFs for affordable housing projects. In line with this, Adabre and Chan (2019) found 'inclusion of affordable unit policy in developer's projects' as CSF for affordable housing project. This can be done through the provision of incentives such as allocation of land at subsidized price, since cost of land is an important determinant of housing affordability. Similarly, development of infrastructure such as road, waste collection facilities, electrification and sanitation system are essential for the development of residential areas. Thus, government should provide all the necessary infrastructure that will promote housing development and increase affordability of the housing supplied. This finding is in agreement with that of Mukhtar et al. (2017) who found provision of infrastructure by government as critical success factors for public housing projects in Nigeria.

6.0 CONCLUSION

The aim of this study is to explore critical success factors for affordable private sector housing projects in Nigeria. The study was conducted by means of survey questionnaires which were administered to experienced researchers, senior managers in housing agencies, developers, and construction practitioners/consultants. The findings from this study reveal four critical success factors for affordable housing in Nigeria, these are: effective land policies for affordable housing, availability of effective financial institutions, good governance of housing systems, and political will. The results implied that, a well-functioning housing sector must satisfy these factors in order to ensure access to adequate and affordable housing by low and middle-income earners. The study concluded that, government has important role to play in increasing access to affordable housing through policy formulation and implementation, creation of legal and regulatory framework as well as establishment of institutional framework that will regulate land and housing development and facilitate easy access to secure and serviced land at affordable price.

To increase affordability of housing to low and medium-income earners, government should formulate policy that will promote easy access to land with secure tenure. There is also needed to create favorable legal and regulatory that can facilitate establishment of effectives financial institutions which will provide long-term loans for housing development at low interest rate. In addition, government should be committed to supporting affordable housing development through the provision of policy solution and implementation. The study can assist housing policy makers to understand important factors which influence the success of affordable private sector housing projects in Nigeria, that should be included in the formulation and implementation of housing policies. The study also provides a basis for evaluating affordability of other types of housing projects in Nigeria and adds to the existing CSFs for Affordable housing. Despite the aim of this study has been achieved, the research has some limitations. Firstly, the sample size for this study is relatively small not cover the entire country, and secondly, the sample of the respondents were drawn using nonprobability sampling techniques. Thus, the findings of the study should be interpreted with the considerations of these limitations. Future studies could collect larger data and use probability sampling techniques to enable generalization of findings. Moreover, further study can be carried out to investigate the relationship between the identified critical success factors and affordable housing projects in other developing countries.

Acknowledgement

The authors wish to thank the Abubakar Tafawa Balewa University Bauchi and Federal University Birnin Kebbi for permitting and supporting the research.

References

- Adabre, M. A., & Chan, A. P. C. (2019). Critical success factors (CSFs) for sustainable affordable housing. *Building and Environment*, 156, 203-214. <https://doi.org/10.1016/j.buildenv.2019.04.030>.
- Adedeji, I., Deveci, G., & Salman, H. (2023). The challenges in providing affordable housing in Nigeria and the adequate sustainable approaches for addressing them. *Open Journal of Applied Sciences*, 13, 431-448. doi: 10.4236/ojapps.2023.133035.

- Almi, N. A., & Husin, K. (2017). Success factors of housing delivery system among Malaysian developers. *International Journal of Real Estate Studies*, 11(5), 19-32.
- Anacker, K. B. (2019). Introduction: Housing affordability and affordable housing. *International journal of housing policy*, 19(1), 1-16. <https://doi.org/10.1080/19491247.2018.1560544>.
- Carswell, A. T. (2012). *The Encyclopedia of Housing*; SAGE Publications: Thousand Oaks, CA, USA.
- Chan, A. P. C., Ho, D. C. K., & Tam, C. M. (2001). Design and build project success factors: Multivariate analysis". *ASCE Journal of Construction Engineering and Management*, 127(2), 93-100.
- Chiwuzie, A., & Dabara, D. I. (2021). Housing construction costs and house rents fluctuations in an emerging property market: the case of Osogbo, Nigeria. *Property Management*, 39(4), 527-545. <https://doi.org/10.1108/PM-06-2020-0041>.
- Chan, A. P. C., Scott, D., & Chan, A. L. (2004). Factors affecting the success of a construction project. *Journal of Construction Engineering and Management*, 130(1), 153-155.
- Cohen, J., Cohen, P., West, S. G. & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences, 3rd ed.* Lawrence Erlbaum Associates, Inc., New Jersey.
- Creswell, J. W. (2012). *Educational Research: planning, conducting, and evaluating quantitative and qualitative research, 4th ed.* Pearson Education, Inc., Boston.
- Ebekozien, A., Aigbavboa, C., Aigbedion, M., Ogbaini, I. F., & Awe, E. O. (2022). Housing finance inaccessibility: evidence from the Nigerian pensioners. *Property Management*, 40(5), 671-689. <https://doi.org/10.1108/PM-09-2021-0064>.
- Ezennia, I. S. (2022). Insight of housing providers on the critical barriers to sustainable affordable housing uptake in Nigeria. *World development sustainability, 1*. <https://doi.org/10.1016/j.wds.2022.100023>.
- FMWH (2011). *National housing policy of Nigeria*. Federal Ministry of Works and Housing, Abuja. <https://worksandhousing.gov.ng>. Accessed, 26th August 2023.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis, 7th edition*. Upper saddle river: Prentice hall.
- Kineber, A. F., Othman, I., Oke, A. E., Chileshe, N., & Zayed, T. (2021). Exploring the value management critical success factors for sustainable residential building- A structural equation modelling approach. *Journal of Cleaner Production*, 293, <https://doi.org/10.1016/j.jclepro.2021.126115>.
- Moghayed, A., Awuzie, B., Omotayo, T., Le Jeune, K., Massyn, M., Ekpo, C.O., Braune, M., & Byron, P. (2021). A critical success factor framework for implementing sustainable innovative and affordable housing: a systematic review and bibliometric analysis. *Buildings*, 11(317). <https://doi.org/10.3390/buildings11080317>.
- Moore, E. A. (2019). Addressing housing deficit in Nigeria: issues, challenges and prospects. *Economic and Financial Review*, 57(4), 201-222.
- Morales, A. J. (2006). *Critical success factors for affordable housing development*. (Unpublished M.Sc. Thesis), University of Colorado.
- Mukhtar, M. M., Amirudin, R., Sofield, T., & Mohamad, I. (2017). Critical success factors for public housing projects in developing countries: a case study of Nigeria. *Environmental Development and Sustainability*, 19(5), 2039–2067. DOI: 10.1007/s10668-016-9843-2.
- Mukhtar, M. M., Amirudin, R., & Mohamad, I. (2016). Housing delivery problems in developing countries: a case study of Nigeria. *Journal of Facilities Management*, 14(4), 315 – 329. <http://dx.doi.org/10.1108/JFM-12-2015-0037>
- Mukhtar, M. M., & Mustapha, M. M. (2019). Critical success factors for sustainable mass housing projects in developing countries: a case study of Nigeria. *Sustainable Buildings and Structures: Building a Sustainable Tomorrow*. CRC Press.
- Mulliner, E., & Malien, V. (2013). Austerity and reform to affordable housing policy. *Journal of Housing and the Built Environment*, 28, 397–407. DOI 10.1007/s10901-012-93.
- Munn, P., & Drever, E. (1990). *Using questionnaires in small-scale research: A Teachers' Guide*. Edinburgh: SCRE Publication.
- Nzau, B., & Trillo, C. (2020). "Affordable housing provision in informal settlements through land value capture and inclusionary housing" *Sustainability* 12(15), 5975. <https://doi.org/10.3390/su12155975>.
- Oliveira, D., Aubecluck, A., Stupple, E., Kim, S., & Orrel, M. (2019). Factor and reliability analysis of a brief scale to measure motivation to change lifestyle for dementia risk reduction in the UK: the MOCHAD-10. *Health Qual Life Outcomes* 17(75). <https://doi.org/10.1186/s12955-019-1143-8>.
- Oluleye, I. B., Ogunleye, M. B., & Oyetunji. A. K. (2021). Evaluation of the critical success factors for sustainable housing delivery: analytic hierarchy process approach. *Journal of Engineering Design and Technology*, 19(5), 1044-1062.
- Osei-Kyei, R., & Chan, A. P. C. (2017). Developing a Project Success Index for Public–Private Partnership Projects in Developing countries. *Journal of Infrastructure System*, 23(4): 04017028.
- Oyebanji, A. O., Liyanage, C., & Akintoye, A. (2017). Critical success factors (CSFs) for achieving sustainable social housing (SSH). *International of Sustainable Built Environment*, 6(1), 216-227. <http://dx.doi.org/10.1016/j.ijsbe.2017.03.006>.
- Pinto, J. K., & Covin, J. G. (1989). Critical factors in project implementation: a comparison of construction and R&D projects. *Technovation*, 9, 49-62.
- Pinto, J. K., & Slevin, D. P. (1987). The critical factors in successful project implementation., *IEEE Transactions on Engineering Management*, 34(1), 22- 28.
- Rockart, J. F. (1982). The changing role of the information system executive: a critical success factor perspective. *MIT Sloan Management Review*, 23(3), 3-13.
- Shah, M. N., Mulliner, E., Singh, T. P., & Ahuja, A. K. (2022). Critical success factors for affordable housing: evidence from lower-middle income and high-income economies. *Journal of Surveying, Construction and Property*, 13(1), 1-19.
- Shobowale, L. (2023). Addressing the housing deficit in Nigeria. *The Cable*. www.thecable.ng/addressing-the-housing-deficit-in-nigeria. Accessed on 13th August 2023.
- Toor, S. R., & Ogunlana, S. O. (2009). Construction professionals' perception of critical success factors for large-scale construction projects. *Construction Innovation*, 9(2), 149-167.
- UN Habitat. (2011). *Affordable land and housing in Africa*. United Nations Human Settlements Programme, Nairobi.
- UN Habitat. (2018). *SDG indicator 11.1.1 training module: Adequate housing and slum upgrading*. United Nations Human Settlement Programme, Nairobi.
- UN Habitat. (2021). *Housing 2030: effective policies for affordable housing in the united nations economic commission europe (unece) region*. United Nations Publications, New York.
- Younesadeh, H., Ardeshir, A., & Sebt, M. H. (2017). Exploring critical success factors in urban housing projects using fuzzy analytic network process. *Civil Engineering Journal*, 3(11), 1048- 1067.
- Yuen, B., Kwee, L. K., & Tu, Y. (2006). Housing affordability in Singapore: can we move from public to private housing? *Urban Policy and Research*, 24(2), 253-270, DOI: 10.1080/08111140600703857.