

Constraints to Housing Interventions by Cooperative Societies in Nigerian Universities: A Factor Analysis Approach.

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Keywords: Cooperative Societies, Housing Intervention, Factor analysis, Universities, Policy Constraints.

SUMMARY

This study investigates the constraints affecting housing interventions by cooperative societies in Nigerian universities using factor analysis to identify underlying dimensions of these challenges. Cooperative societies play an important role in addressing staff housing shortages through collective savings, credit provision, and housing development, yet their effectiveness is constrained by institutional, economic, and policy-related factors. Primary data were collected in 2020 from 383 members of six purposively selected cooperative societies in federal universities in Southwest Nigeria using structured questionnaires. Eighteen constraint variables were analysed using Principal Component Analysis with oblique (direct oblimin) rotation, while reliability and data adequacy were confirmed through Cronbach's alpha, the Kaiser–Meyer–Olkin measure, and Bartlett's test of sphericity. The analysis extracted three latent components explaining 67.751% of the total variance. The dominant component (53.888%) relates to cooperative governance issues, including weak management capacity, poor financial accountability, uncommitted membership, and inadequate internal policies. The second component reflects housing construction cost and economic constraints such as high land prices, rising construction and material costs, poor economic conditions, and inadequate infrastructure. The third component captures funding limitations and government interference, including inadequate member contributions, limited access to mortgage finance, and regulatory constraints. Overall, the findings highlight governance quality as the most critical determinant of cooperative housing outcomes, alongside economic and institutional pressures, and underscore the need for strengthened governance frameworks, cost-reduction strategies, improved access to housing finance, and supportive regulatory policies to enhance cooperative housing delivery in Nigerian universities.

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ABSTRACT

Factor analysis is a standard statistical technique for reducing data dimensionality and is widely applied in sociology, psychology, demography, and policy research. This study documents the application of factor analysis in examining constraints to housing interventions by cooperative societies in Nigerian universities. The study aims to identify latent factors constraining housing interventions and to provide policy-relevant insights for improving cooperative housing delivery. Data were collected from 383 members of six purposively selected cooperative societies across federal universities in Southwest Nigeria. The analysis revealed three distinct components. Component 1 comprises nine items and is grouped as *Cooperative governance issues*. Component 2 consists of six items labeled *Housing construction cost and economic-related issues*. Component 3 includes three items grouped as *Government interference and funding issues*. The first principal component explains 53.888% of the total variance, while the second and third components account for 7.497% and 6.366% respectively. The findings highlight critical barriers to effective cooperative housing interventions and provide guidance for policy measures aimed at strengthening governance, managing construction costs, and reducing external constraints.

1. INTRODUCTION

Housing provision remains a persistent challenge within Nigerian universities, where the supply of institutional housing has consistently fallen short of staff demand. As a result, cooperative societies have emerged as important institutional mechanisms for facilitating access to housing through collective savings mobilization, credit provision, and housing development initiatives. Within university environments, staff cooperative societies play a strategic role in supporting housing aspirations and mitigating accommodation challenges.

Despite their relevance, cooperative housing interventions in Nigeria have recorded limited success due to a combination of institutional, economic, and policy-related constraints. Empirical studies identify governance weaknesses, rising construction costs, limited access to housing finance, and regulatory bottlenecks as major impediments to cooperative housing delivery (Ajayi, 2022; Oyalowo & Babawale, 2024). These challenges have been further intensified by post-2020 macroeconomic conditions, including inflation and escalating costs of building materials (Ale, 2025).

Against this background, this study applies factor analysis to empirically identify and categorize the underlying constraints affecting housing interventions by cooperative societies in Nigerian universities. By isolating latent dimensions from a broad set of observed variables, the study

provides evidence-based insights relevant to housing policy, cooperative governance, and land administration discourse.

2. LITERATURE REVIEW

2.2 Constraints to Cooperative Housing Interventions

Cooperative societies are widely recognized as important instruments for improving access to affordable housing, particularly for low- and middle-income earners. Through pooled resources, mutual support, and democratic governance, housing cooperatives reduce individual financial burdens and enhance access to credit and land (Frontiers Editorial Team, 2025). In Nigerian tertiary institutions, staff cooperative societies have increasingly contributed to housing outcomes by facilitating incremental housing development and access to mortgage finance (Omotosho et al., 2025). Despite this potential, existing literature consistently shows that cooperative housing interventions in Nigeria are constrained by interrelated financial, governance, policy, infrastructural, and economic factors.

Inadequate access to affordable finance remains the most frequently cited constraint. Adeboyede and Oderinde (2013) identify weak fund mobilization capacity as a major limitation to cooperative housing provision in Oyo State, restricting the ability of cooperatives to meet housing demand among low-income earners. Similarly, Farouk et al. (2014) report delays in loan disbursement, loan default, and insufficient funding as key challenges confronting Savings and Credit Cooperative Societies, although they acknowledge cooperatives as viable alternatives to formal housing finance institutions if better integrated into housing policy.

Institutional and governance weaknesses further constrain cooperative housing delivery. Oladejo (2013) highlights policy neglect, weak capital base, poor leadership, inadequate accounting practices, and limited adoption of modern technologies, alongside the failure to leverage mortgage financing opportunities. These findings are reinforced by Babalola (2014), who reports that lack of transparency, weak accountability, and low member participation undermine democratic governance and financial management within cooperative societies.

Economic and structural constraints are particularly evident in urban contexts. Oloke (2015) identifies high land acquisition costs, lack of external finance, weak land policies, and inadequate off-site infrastructure as major barriers to cooperative housing interventions in Lagos State. Akinlabi (2015) similarly reports fund shortages, absence of dedicated housing loan packages, corruption, embezzlement, and loan diversion as constraints to the performance of multipurpose cooperative societies. Policy and structural disparities within cooperative finance frameworks further weaken financial performance (Ailemen et al., 2015).

Infrastructure deficits and rising housing production costs remain persistent constraints to cooperative housing delivery. Durodola et al. (2016) report inadequate on-site infrastructure and poor maintenance of cooperative housing estates, while Azeez and Mogaji-Allison (2017) identify high construction material costs, bureaucratic bottlenecks, restrictive government policies, internal management weaknesses, limited access to mortgage finance, and reliance on imported building materials as major barriers to affordable housing provision. Recent studies consolidate these challenges into broader categories, including governance and internal

management issues, transaction costs, housing production costs, and limited external support (Oyalowo et al., 2018; Ajayi, 2022). These constraints have been exacerbated by inflationary pressures since 2020, which have escalated construction costs and reduced housing affordability (Influence of Critical Success Factors..., 2023; Ale, 2025). In addition, limited access to formal mortgage finance and continued government interference remain significant external constraints (Isiwele et al., 2024; Oyalowo et al., 2023). A summary of the key constraints to housing interventions of cooperative societies identified in the literature is presented in Table 1.

Table 1: Housing Intervention Constraints of cooperative societies

S/N	Constraining factors of effective housing intervention	Supporting literature
1	Unqualified cooperative management committee	Umebali <i>et al.</i> (2018)
2	Poor management of funds by cooperative officials	Umebali <i>et al.</i> (2018)
3	Poor accounting and record keeping	Dayanandan(2013); Puri and Walsh (2018)
4	Uncommitted membership	Olanrewaju and Idrus (2020)
5	Poor loan recovery/high default rate from cooperative members	Kiarie (2011)
6	Unfavourable lending policy of the cooperatives	Oduma and Ibem (2011)
7	Lack of modern business techniques by the cooperative	Birchall (2003); Oloke (2015); Kyazee <i>et al.</i> (2017)
8	Diversion of housing loans by cooperative members for other purposes	Sulaiman (2003); Babalola (2014); Akinlabi (2015)
9	Lack of clear policy on cooperative management	Umebali <i>et al.</i> (2018)
10	High cost of land	Oduma and Ibem (2011); Alawadi <i>et al.</i> (2018)
11	Poor economic condition	Oyediran (2019)
12	Lack of supportive policy from the Government for land acquisition	Adejumo, 2008; Aluko(2012); Lawal and Adekunle(2018); Ugonabo and Emoh(2013); Owoeye and Adedeji (2015)
13	High cost of housing construction	Okwu <i>et al.</i> (2017); Olotuah (2012); Ugonabo and Emoh (2013)
14	High cost of building materials for housing const--ruction	Oyediran (2019); Olanrewaju and Idrus (2020); Akinmoladun and Oluwoye (2007); Enisan and Ogundiran (2013)
15	Inadequate onsite and offsite infrastructure	Durodola <i>et al.</i> (2016); Ajayi (2017)
16	Lack of opportunities by the cooperative to tap into formal mortgage financing	Azeez and Mogaji-Allison (2017); Oladejo (2013)
17	Government interference into Cooperative activities and manipulation	Azeez and Mogaji-Allison (2017); Sa'ad (2017)
18	Inadequate Cooperative funding by members	Farouk <i>et al.</i> (2014); Adeboyede and Oderinde (2013); Adeyemo (2014)

Despite the extensive body of literature on cooperative housing delivery in Nigeria, a major limitation remains the limited application of rigorous empirical techniques to systematically determine and structure the constraints affecting housing interventions of Cooperative Societies, particularly within tertiary institutions. Most existing studies rely largely on descriptive or qualitative approaches, which, while insightful, do not sufficiently reveal the underlying structure and interrelationships among the identified constraints. Addressing this gap, the present study employs factor analysis to empirically identify and categorize the latent dimensions influencing housing interventions by Cooperative Societies in Nigerian universities. By isolating these underlying factors from a broad set of observed variables, the study provides evidence-based insights that contribute to housing policy formulation, cooperative governance reform, and land administration discourse, while also strengthening the methodological depth of cooperative housing research in Nigeria.

3. MATERIALS AND METHODS

3.1 Study Area and Data Collection

The study was conducted across six purposively selected federal universities in Southwest Nigeria. Primary data were collected in 2020 from 383 registered members of cooperative societies actively involved in housing intervention schemes. Data collection was carried out using structured questionnaires administered to cooperative members.

3.2 Analytical Procedure

To examine the dimensionality of the eighteen variables representing constraints to housing intervention outcomes, the dataset was subjected to several preliminary diagnostic tests, including Cronbach's alpha reliability test, Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, and factor analysis. Principal Component Analysis (PCA) with oblique (direct oblimin) rotation was employed to extract latent factors underlying the observed variables.

4. RESULTS

4.1 Preliminary Tests for Factorability

Table 2: Reliability Test of Constraints to Housing Interventions

Cronbach's Alpha	Cronbach's Alpha Standardized Items	Based on N of Items
0.949	0.949	18

The reliability test results (Table 2) indicate a Cronbach's alpha coefficient of 0.949 for the eighteen variables, demonstrating excellent internal consistency.

Table 3: Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Test of Sphericity

Test		Statistic
Kaiser-Meyer-Olkin		0.945
Bartlett's Test of Sphericity:	Approx. Chi-Square	4854.395
	Degree of freedom	153
	Significance	0.000

The KMO value of 0.945 and the statistically significant Bartlett's Test of Sphericity ($\chi^2 = 4854.395$, $df = 153$, $p < 0.001$) confirm the suitability of the dataset for factor analysis (Table 3).

4.2 Factor Analysis of the Constraints to Housing Interventions

Factor analysis was employed to examine the statistical structure of 18 determinants influencing the housing intervention outcomes of Cooperative Societies in the study area. The analysis produced an overall determinant of the correlation matrix of 2.402E-006 (0.000002402), which exceeds the minimum acceptable threshold of 0.000001 recommended by Field (2005) and Hinton et al. (2004). This indicates the absence of offending variables and confirms that multicollinearity is not a concern, thereby validating the suitability of the data for factor analysis. The communalities of the 18 determinants ranged from 0.545 to 0.755, with “inadequate cooperative funding by members” recording the lowest value and “unqualified cooperative management committee” the highest. All values exceeded the 0.500 benchmark, indicating that each determinant shared sufficient common variance with others.

Factor extraction was conducted using the principal component method, with oblique (direct oblimin) rotation and Kaiser normalization. The choice of oblique rotation over orthogonal methods such as varimax was informed by the expectation that the extracted factors would be correlated, given that the variables measure related aspects of a single construct. This assumption was supported by the factor transformation matrix, which revealed a relatively high correlation of 0.669 between Component 1 and Component 2. Factor retention was based on the eigenvalue-greater-than-one criterion. In line with Garson (2012), factors with eigenvalues below 1.000 were discarded, as they contributed minimally to explaining variance among the observed variables.

4.3 Factor Extraction and Variance Explained

As shown in Table 4, Principal Component Analysis with oblique rotation yielded three components with eigenvalues greater than 1.000. The first component explains 53.888% of the total variance, while the second and third components explain 7.497% and 6.366% of the total variance explained respectively. Together, the three components account for 67.751% of the total variance. The scree plot function as shown in fig 1 further supports the three-factor solution using the associated eigenvalues, as the slope gradient of the screen plot flattened out sharply

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after the 3rd component. Community values ranged from 0.545 to 0.755, indicating that all variables shared sufficient common variance with the extracted factors.

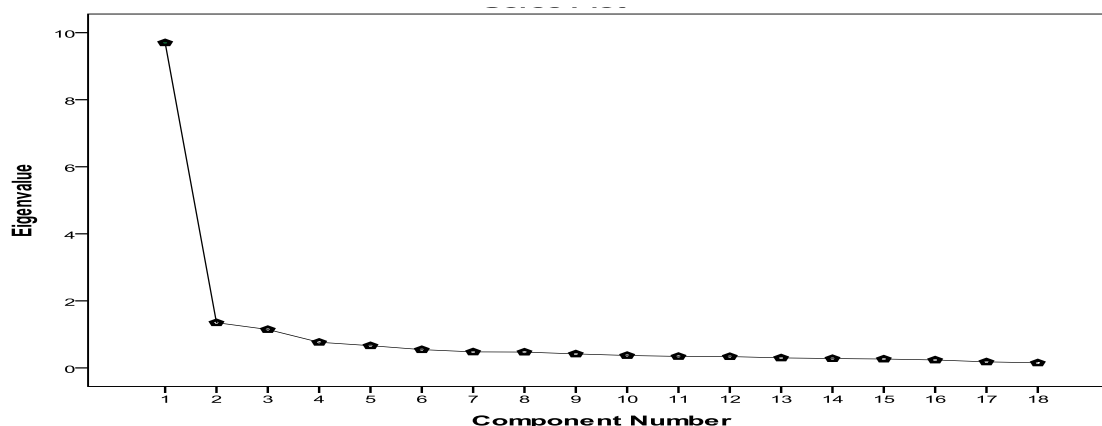


Fig 1: Screen plot for the component extraction

Table 4: Total Variance Explained by the Identified Constraints of Housing Intervention

Component t	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	
1	9.700	53.888	53.888	9.700	53.888	53.888	8.576	
2	1.349	7.497	61.385	1.349	7.497	61.385	7.686	
3	1.146	6.366	67.751	1.146	6.366	67.751	4.534	
4	.765	4.252	72.002					
5	.663	3.683	75.685					
6	.546	3.031	78.716					
7	.478	2.655	81.371					
8	.472	2.625	83.996					
9	.418	2.320	86.315					
10	.371	2.060	88.375					
11	.343	1.905	90.280					
12	.338	1.879	92.159					
13	.299	1.659	93.818					
14	.279	1.550	95.368					
15	.265	1.473	96.841					
16	.237	1.317	98.158					
17	.181	1.004	99.162					

4.4 Factor Loadings and Interpretation

Table 5 contains the pattern of factor loadings in the rotated solution for the three (3) components. Based on the distribution of the 18 determinants on the rotated solution, component 1 comprises 9 items with factor loadings ranging from 0.503 to 0.978. Component 2 has 6 items with loadings from 0.632 to 0.897 while Component 3 consists of 3 items with factor loadings from 0.576 to 0.889. In addition, the results of the internal consistency based on the Cronbach's alpha value ensured that the three components (0.937, 0.904, and 0.735, respectively) altogether produced a reliable scale of housing intervention constraint.

The examination of Table 5 revealed that the main factors on the first principal component contained item such as unqualified cooperative management committee(0.978), poor management of funds by cooperative officials(0.847), poor accounting and record keeping(0.810), uncommitted membership(0.801), poor loan recovery/high default rate from cooperative members(0.766), unfavourable lending policy of the cooperatives(0.749), lack of modern business techniques by the cooperative(0.710), diversion of housing loans by cooperative members for other purposes (0.675)and lack of clear policy on cooperative management(0.503). These 9 items interestingly forms a distinctive aspect of constraints of housing intervention which fraught federal university based Cooperative Societies. These 9 items by extension are grouped "*Cooperative governance issue*".

In the second component, the factors identified for inclusion include items as high cost of land (0.897), poor economic condition (0.863), lack of supportive policy from the Government for land acquisition (0.790), High cost of housing construction (0.763), high cost of building materials for housing construction (0.643) and inadequate onsite and offsite infrastructure (0.632). All the 6 items are however labeled "*Housing construction cost and economic related issue*".

Under the third component, the main factors comprise the 3 items of inadequate cooperative funding by members (0.889), lack of opportunities by the cooperative to tap into formal mortgage financing (0.733) and government interference into cooperative activities and manipulation (0.576). All these items are grouped as "*Government interference and funding issue*".

Table 5: Rotated Component Matrix for the Identified Constraints of Housing Intervention

Rotated factor pattern	Component		
	Cooperative governance issue	Housing construction cost and economic related issue	Government interference and funding issue
Unqualified cooperative management committee	0.978		
Poor management of funds by cooperative officials	0.847		
Poor accounting and record keeping	0.810		
Uncommitted membership	0.801		
Poor loan recovery/high default rate from cooperative members	0.766		
Unfavourable lending policy of the cooperatives	0.749		
Lack of modern business techniques by the cooperative	0.710		
Diversion of housing loans by cooperative members for other purposes	0.675		
Lack of clear policy on cooperative management	0.503		
High cost of land		0.897	
Poor economic condition		0.863	
Lack of supportive policy from the Government for land acquisition		0.790	
High cost of housing construction		0.763	
High cost of building materials for housing construction		0.643	
Inadequate onsite and offsite infrastructure		0.632	
Lack of opportunities by the cooperative to tap into formal mortgage financing			0.889
Government interference into cooperative activities and manipulation			0.733

Inadequate cooperative funding by members			0.576
Eigen values	9.700	1.349	1.149
Variance explained (%)	53.888	7.497	6.366
Cumulative variance (%)	53.888	61.385	67.751
Internal consistency (Cronbach's alpha)	0.937	0.904	0.735

Notes: Extraction method: principal component analysis; rotation method: Oblimin with Kaiser normalizatio

5. CONCLUSION

The findings indicate that cooperative governance issues are the most significant constraint to housing interventions by cooperative societies in Nigerian universities, accounting for over half of the total variance. This underscores the importance of management competence, financial accountability, and institutional capacity in cooperative housing delivery, consistent with earlier studies (Ajayi, 2022; Omotosho et al., 2025). The result aligns with Oyalowo et al. (2018), who identified poor internal governance as the most influential constraint to housing supply in Lagos State, limiting cooperatives' progress in the housing development process. Inadequate governance systems therefore remain a fundamental challenge, requiring specialized technical and managerial expertise for effective cooperative administration (Branch & Baker, 1998; Odera, 2012).

The second major constraint relates to housing construction costs and economic factors. Empirical results show that high land costs, which form a substantial share of construction expenses, have the highest factor loading within this component and significantly hinder cooperative housing delivery. This finding supports earlier studies in Nigeria and other contexts that identify land cost as a major barrier to affordable housing provision (Oduma & Ibem, 2011; Alawadi et al., 2018; Olanrewaju & Idrus, 2020).

The third constraining component comprises inadequate funding and government interference. Insufficient member contributions limit cooperative performance, as cooperatives depend largely on internally generated funds, making capital accumulation difficult (Adeyemo, 2014). Government interference also emerged as a significant constraint, corroborating findings by Sa'ad (2017) and Azeez and Mogaji-Allison (2017) that excessive involvement undermines cooperative efficiency and housing provision. While government support is necessary for regulatory frameworks, undue interference weakens cooperative autonomy and contradicts core cooperative principles.

6. POLICY IMPLICATIONS

The findings suggest the need for:

- Professionalization and continuous capacity building of cooperative management committees
- Strengthening financial accountability, transparency, and loan recovery mechanisms
- Adoption of Cost-reduction strategies such as cooperative collaboration and bulk procurement
- Development of supportive housing finance and regulatory frameworks with minimal government interference

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BIOGRAPHICAL NOTES

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housing interventions, real estate economics, land administration, property valuation, and applied quantitative and multivariate methods. She has conducted extensive empirical research on housing interventions by university-based cooperative societies, rental housing affordability, property development patterns, and land-use dynamics in Nigeria. Her research outputs include a doctoral thesis funded by TETFund and several self-sponsored studies addressing housing and real estate challenges in both urban and institutional contexts. She has published widely in local and international peer-reviewed journals and has contributed numerous papers to national and international conference proceedings, including conferences held in Nigeria, South Africa, and Turkey. Her scholarly works appear in journals such as the *Construction and Human Settlements Management Journal*, *Journal of Sustainable Development*, *IOSR Journal of Environmental Science*, and *Environmental Technology and Science Journal*, among others. Dr. Abdulkareem is a Registered Estate Surveyor and Valuer (RSV) and an Associate Member of the Nigerian Institution of Estate Surveyors and Valuers (NIESV). She has served the profession in several capacities, including Treasurer of the NIESV Niger State Branch, member of the NIESV Board of Examiners, Education Committee member, Assistant Women Wing Coordinator and Chairperson of the Budget and Planning Committee of the NIESV Women Wing, Niger State Branch. Within the university, she has held various academic and administrative roles, including level adviser, assistant examination officer, board memberships, and welfare committee chairperson. Her contributions have been recognized through awards for selfless service and academic excellence.

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