

Article

Critical Barriers of Affordable Housing Delivery in Developing Countries: Evidence from Pakistan Using PLS-SEM

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Abstract

Affordable housing delivery is a global concern, especially in developing countries; in the same way, Pakistan is also facing this challenge due to haphazard urbanization. Governance failures, and socio-economic and cultural constraints make policy interventions difficult. This research synthesizes market, regulatory, governance and cultural factors to investigate the critical barriers of affordable housing delivery. To analyze this phenomenon, Partial Least Squares Structural Equation Modeling (PLS-SEM) was performed. Formative and reflective constructs were evaluated using primary data from 200 professionals in Punjab, Pakistan. The findings show that while market and financial restrictions have no evident impact, policy and governance failure, institutional and regulatory impediments, and socio-cultural constraints have a considerable impact on housing affordability delivery. The model highlights the predominance of institutional and cultural variables over simply financial reasons, accounting for 77.8% of the variance in housing affordability delivery. The findings give vital insights to policymakers pursuing housing affordability solutions in developing countries.

Keywords: housing affordability; sustainability; failure of governance for housing; socio-cultural factors of housing

1. Introduction

Affordability of housing has become a global challenge for both developed and developing countries. Especially, developing nations are facing a housing shortage due to increasing urbanization, income disparity, and institutional restraints. Affordable and sufficient housing, coupled with essential services, infrastructure, and conducive environment besides only shelter, is conceded by the UN as a basic human right [1]. Factually, the connection between household income and domestic expenses often influences housing affordability. This impact signifies households' trade-offs between housing and non-housing expenditures [2].

Addressing housing affordability is not merely an economic challenge, but a vital prerequisite for achieving the United Nations' Sustainable Development Goal (SDG) 11: "Make cities and human settlements inclusive, safe, resilient and sustainable" [3]. As highlighted by [3], implementing the SDGs requires a deep integration of institutional governance with local socio-economic realities, mainly when addressing urban inequalities and infrastructure access. In developing countries like Pakistan, formal housing markets exclude low-income populations due to institutional barriers, and households are forced into informal, self-built settlements on marginal lands. These unplanned urban expansions



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lead to environmental degradation, inefficient land and resource consumption, inadequate sanitation, and increased vulnerability to climate-related disasters [3]. Therefore, effective affordable housing delivery is inherently linked to environmental protection and achieving the urban resilience goal of SDG 11 remains impossible without it. This evolution of affordable housing development highlights a clear distinction between the Global North and the Global South, indicating that uniform housing policies cannot be universally applied across contrasting economic contexts.

However, the literature highlights several successful examples of state-supported affordable housing delivery within low-income regions. These interventions include the expansion of housing microfinance institutions in India, the facilitation of incremental self-construction in Latin American cities, and the promotion of community-led housing initiatives in South Africa [4]. In middle- and high-income nations, sustainable affordability has typically been achieved through a combination of long-term policy consistency, low-interest credit instruments, strategic site selection, proximity to public infrastructure, and rigorous regulatory monitoring [5,6]. On the contrary, researchers have identified several barriers of affordable housing delivery including rapid urbanization, increasing land prices, weak municipal planning systems, inefficient delivery mechanisms, rigid land-use regulations, and restrictive floor space indexes [1,4,7]. The negative impacts of these factors are severely magnified in nations characterized by weak institutional governance, economic constraints, and inconsistently enforced regulatory frameworks.

In this context, Helble, Ok Lee [1] advocate for the collection of localized empirical evidence on housing affordability within developing countries. They further highlight the importance of assessing housing affordability among low-income households residing in rental and informal housing, rather than focusing exclusively on formal owner-occupied housing. This focus is highly salient for Pakistani cities, where an extensive segment of the population remains systematically excluded from the formal housing market [8–10].

Since independence, successive governments of Pakistan have identified housing as an important sector within national development agendas and consistently including it in successive Five-Year Plans [11]. However, an institutional disparity remains embedded; while the federal government via the Planning Commission and the Ministry of Housing and Works has primarily acted as the central policymaker [12], provincial and local governments have historically struggled to operationalize and implement these policies. This fragmented governance has resulted in administrative mismanagement, weak enforcement, and the systemic neglect of the low-income demographic. Consequently, as the public sector consistently failed to meet urban production demands, private developers undertook control of the housing market. The resulting proliferation of premium real estate, accessible only to middle- and upper-income brackets, stands as a direct consequence of this structural public-sector deficit [13].

Due to prevalent policy failures, low-income segments fulfill their housing needs through self-built methods on informally developed, encroached, or unserved lands. Approximately 40% of the urban housing requirement is met by utilizing household savings, informal loans, and the liquidation of personal assets [14]. This informal approach to meeting housing demand is inherently linked to substandard infrastructure, poor construction quality, and severe legal instability [15]. These structural deficiencies highlight the persistent inability of formal housing systems to provide sustainable and affordably priced options.

The housing crisis in Pakistan has gradually escalated despite numerous state interventions across successive political regimes, including national housing policies enacted in 1982, 1986, 1992, and 2001 [16]. Recent initiatives, such as the Naya Pakistan Housing Program (2019) and subsequent provincial schemes, have drawn substantial academic and

public criticism due to poor execution and a complete lack of public engagement, particularly with low-income households [17,18]. Consequently, these programs have served middle-class and wealthier households, widening the disparity in housing availability for the lower-income demographic. This systemic failure typically arises when “land policies are formulated at central government level, but implementation is handled by local governments” [4]. A lack of political will and the absence of a well-defined institutional framework present further barriers to meeting the affordable housing needs of the target population [19].

Pakistan’s housing crisis is estimated to worsen in the near future. Due to its higher growth rate, it is estimated that Pakistan will be fifth-largest population in the world by 2050. Ultimately the need for urban housing will rise exponentially [20]. Furthermore, with an estimated annual deficit of approximately 350,000 additional units, the country’s reported baseline housing shortfall of 10 million units is projected to expand significantly [21]. Achieving core housing affordability objectives remains unattainable without fundamental structural reforms addressing market constraints, socio-cultural impediments, regulatory rigidities, and governance shortcomings.

Although the existing literature has documented Pakistan’s housing challenges, the vast majority of published research remains predominantly descriptive and lacks empirical rigor. For instance, Malik, Roosli [22] analyzed the policy framework and institutional arrangements for affordable housing delivery in Punjab using a basic literature review, secondary data, and informal stakeholder discussions. Similarly, Malik and Nurunnabi [23] identified barriers to low-income housing in a purely descriptive manner on the basis of 30 stakeholders’ interviews from two cities only. Sindhu [24] presented the concept of affordability and affordable housing in Pakistan by reviewing the literature and secondary data and using thematic analysis approach. Butt [25] attempted to identify hurdles and steps taken to remove them during the implementation of Naya Pakistan Housing Program. His study also relies on thematic analysis of merely 23 interviews of stakeholders. Consequently, the prior literature features a distinct gap: no study has performed advanced empirical modeling to quantitatively analyze the complex mechanisms connecting socio-economic dynamics, organizational structures, and urban governance.

To fill this gap, this research uses Partial Least Squares Structural Equation Modeling (PLS-SEM) to empirically investigate the critical barriers in the delivery of affordable housing in Pakistan. This research also presents one of the first evidence-based interpretations of how these interlinked factors collectively impact affordable housing delivery by coupling market and financial limitations, organizational and regulatory barriers, policy and governance failures, and socio-cultural aspects into a cohesive analytical framework. While analyzing this, it provides policy-pertinent insights for developing a more sustainable and broad affordable housing delivery mechanism in Pakistan and likewise in other developing nations.

This paper is organized into six sections. Section 2 presents a critical review of housing policies in Pakistan encompassing the trend of affordable housing delivery. It also takes policy and governance failure, regulatory and institutional barriers, market, financial and socio-cultural constraints into account. This review led to the development of the hypotheses for this research. Section 3 presents the justification for using PLS-SEM and conceptual model specification. Section 4 reveals the results of the analysis, structural model assessment and hypothesis testing. Section 5 advances discussion on the findings of the study and policy implications.

2. Literature Review

2.1. Evolution of Housing Policy in Pakistan

The pyramid of housing policy in Pakistan reveals a distinct pattern of path dependence, where past decisions, organizational arrangements, and political priorities have failed to achieve objectives of housing interventions. Although the housing sector has maintained a prominent position within the trajectory of national development planning—with explicit targets set in successive Five-Year Plans since the existence of Pakistan [11]—policy execution has been deeply fragmented. While the federal government primarily developed these policies, operational responsibilities were divided among provincial and local departments, resulting in poor coordination and conflicting outcomes [12].

Historical interventions during the 1950s and 1960s focused on providing fully serviced plots and housing for government employees. In reality, these programs primarily served the middle- and high-income population, while low-income segments were marginalized and pushed to peripheral urban locations with poor linkages to the job market and basic services [26,27]. Large-scale housing initiatives, such as Korangi Township in Karachi and Kot Lakhpat in Lahore, clearly demonstrate how poor site selection and inadequate infrastructure undermined affordability goals, ultimately forcing displaced households to return to informal settlements [12].

Successive policy shifts during the 1970s sought to address these limitations through site-and-services schemes and the regularization of squatter settlements. Legislative interventions, such as the Punjab Land Acquisition Act of 1973, empowered government agencies to acquire land for low-income housing at fixed prices, enabling public bodies to experiment with community-oriented housing provisions through organizations like the Awami Rehaishi Tahzeem (ART) [18]. Although these efforts achieved partial success in tenure regularization, their systemic impact remained limited due to institutional inefficiencies, political interference, and fiscal constraints.

Subsequent National Housing Policies (NHPs)—including those formulated in 1982, 1986, and 1992—failed to achieve their intended outcomes, largely because they lacked regulatory authority, which led to weak enforcement and execution [12]. Similarly, the National Housing Policy of 2001 [28], which stood as the first officially adopted comprehensive housing policy framework, struggled to realize its objectives due to inadequate enforcement mechanisms, institutional fragmentation, and limited accountability [18]. Furthermore, recent flagship initiatives, such as the Naya Pakistan Housing Program (2019) [29] and current provincial schemes like the “Apni Chhat Apna Ghar” program, have consistently encountered these same historical structural bottlenecks, undermining contemporary housing delivery trajectories.

Figure 1 outlines this historical course and demonstrates how the hierarchy of housing policies, despite different political contexts, has constantly led to similar outcomes. The most significant concern is that low-income households are largely overlooked, while the majority of benefits accumulate to middle- and higher-income groups. This continuity features the relevance of path dependence in defining housing affordability and sustainability outcomes in Pakistan (Figure 1).

In Figure 1, the top tier outlines major historical and contemporary public housing initiatives. The middle tier identifies recurring structural, political, and regulatory failures embedded within these frameworks. The bottom tier demonstrates the ultimate redirection of policy benefits; as indicated by the causal arrows, systemic bottlenecks systematically deflect outcomes away from the intended Low-income group and disproportionately favor the Middle- and higher-income groups.

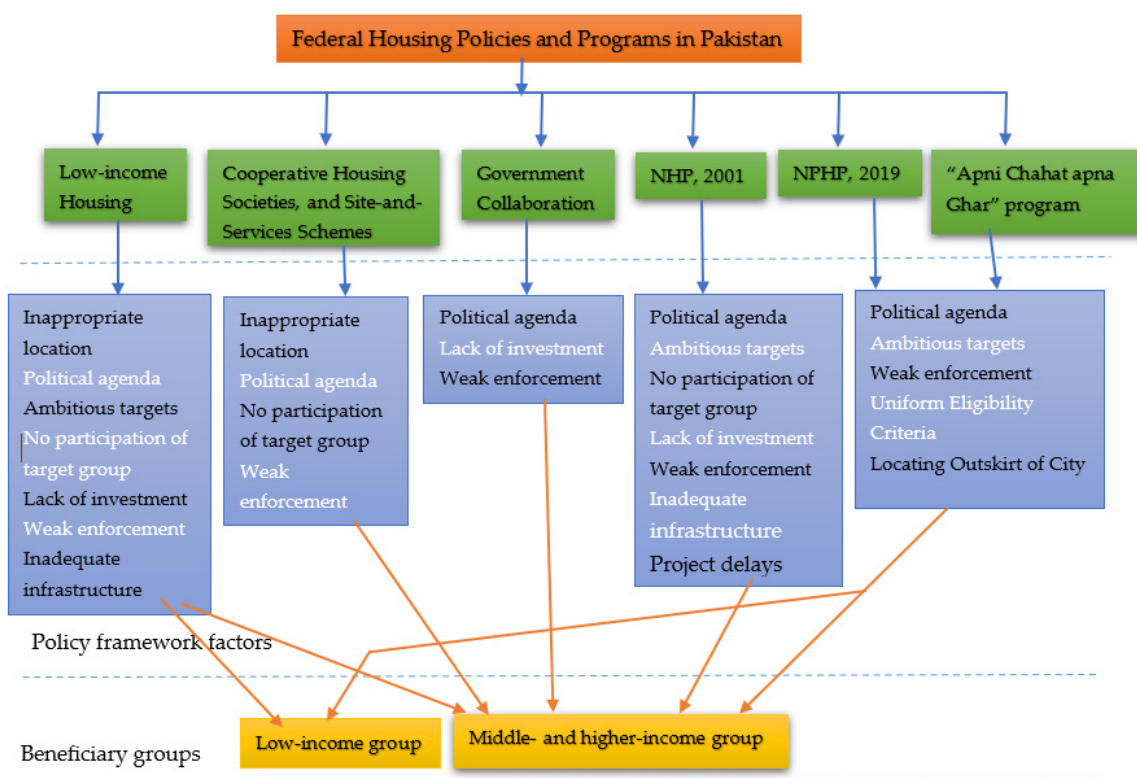


Figure 1. Structural mapping of federal housing policies, systemic implementation failures, and resulting beneficiary distributions in Pakistan. (Source: Developed by authors). Note: NHP, 2001 = National Housing Policy 2001 [28]; NPHP, 2019 = Naya Pakistan Housing Program 2019 [29].

2.2. Policy and Governance Failure

Governance quality plays a pivotal role in defining housing outcomes, particularly in developing countries where institutional ability is limited. The housing policy could not deliver much in Pakistan due to political agendas, discontinuity across regimes of different governments, ambitious but idealistic targets, and weak implementation mechanisms [13,17]. Housing programs are often launched as an outcome of political initiatives, with very limited continuousness once governments change, resulting in project delay, abandonment, or transferal toward alternative political agendas.

The research highlights that national housing policies are mostly devised with no or minimal participation from expected beneficiaries, specially low-income households, leading to eligibility criteria that prohibit the relevant groups for whom the policies are formed [18]. Moreover, the major role of federal policymaking without considering decentralized implementation has resulted in a weak or the lack of a connection between policy design and local housing needs, notably across cities of variable sizes and affordability conditions.

The weak implementation further complexes these issues. Regulatory rules of land use, building bylaws and standards, and developer contracts are often inconsistent, allowing speculative development and eventually informal practices to flourish [13]. Subsequently, housing programs that are supposed to target the poor segment of society, lead to produce outcomes that favor financially stable households and eventually lead to inequality within the housing market. These governance bottlenecks are not unique to Pakistan but reflect a broader Global South paradigm. For example, in South Africa, which faces a massive low-income housing backlog, governance deficiencies—specifically a lack of stakeholder participation, accountability, and transparency—serve as the critical “missing link” in housing delivery [30]. Similar to the top-down mechanisms observed in Pakistan, when the state

acts as the sole driver and excludes local communities from the planning phase, it triggers significant community resistance during project implementation. This comparative evidence demonstrates that participatory governance is a universal prerequisite for successful affordable housing delivery in developing economies. Therefore, the flaws of governance could not produce the desirable results and remain a major cause of not achieving housing affordability and sustainability in Pakistan.

2.3. Regulatory and Institutional Barriers

In addition to the policy intent, the organizational and regulatory environment substantially shapes housing supply and affordability. The housing sector in Pakistan can be termed as a complex set of regulations, engaging multiple authorities at federal, provincial, and local levels, mostly with overlapping or contradictory mandates [22]. This division contributes to approval delays, variable multiple tiers of enforcement of building regulations, and insecurity for both public and private developers.

The other issues relevant to regulatory measures are strict housing bylaws and zoning standards implemented uniformly across regions with varied socio-economic segments that constrain affordable housing delivery. The literature has reported that strict plot size requirements, density controls, and standards defined for buildings further add to development costs and restrict the flexibility required to house low-income households [14,31]. Furthermore, ineffective enforcement of land-use regulations facilitates informal development, while concurrently penalizing regulated low-cost housing initiatives that are implemented after following lengthy approval processes and excessive compliance costs.

Global research shows that complicated regulations, heavy red tape, and weak management consistently paralyze affordable housing programs worldwide [4,32]. On an institutional level, these issues frequently disrupt public–private partnerships because legal and operational risks are poorly distributed, which stalls policy execution from the very start [33]. These inefficiencies are further worsened by poor project management and constant friction between different agencies during the design and building phases, which directly chokes production capacity [34]. Ultimately, these multi-layered bureaucratic hurdles create a highly rigid environment that makes building sustainable, low-cost homes incredibly difficult in developing nations. The incompetence of institutions is also exhibited in inconsistent policies between local organizations and federal government institutions, weakening coordinated planning and implementation [22]. These regulatory mechanisms and organizational barriers jointly limit the supply of affordable housing and increase disparities in housing provision.

2.4. Market and Financial Constraints

The market structure and economic circumstances denote another significant dimension that influences housing affordability. In Pakistan, opportunities for formal housing finance are limited, especially for low-income and unregulated sector workers who lack permanent incomes or collateral [35]. The higher markup rates, inflation, and harsh credit terms further limit mortgage financing, emphasizing reliance on informal financing means.

The governmental schemes for financing, such as those initiated under the Naya Pakistan Housing Program, remain under criticism for being mostly unavailable to low-income households due to strict terms and conditions and unaffordable payment plans [17]. Whereas these programs are inclined to be more beneficial for middle-income groups, people within those groups are in a sufficiently stable economic condition to fulfill formal financing requirements. High land prices coupled with rising construction costs because of

inflation, and almost negligible incentives for private sector developers to invest in low-cost housing programs led to altered market outcomes [36].

These financial hurdles are further complicated by the strict balancing act between time, cost, and quality in affordable housing construction [37]. In volatile markets, unexpected project delays quickly translate into skyrocketing labor and financing costs, which private developers cannot absorb without sacrificing building quality. When governments fail to allocate financial resources strategically, market pressures like sudden material price spikes instantly affect the supply chain [38]. In conclusion, these aspects comprise market and financial restrictions that methodically restrict the provision of sustainable housing affordability.

2.5. Socio-Cultural Constraints

Beyond economic or legal issues, affordable housing projects often fail because they ignore the human and social dimensions of the community [4]. When developers rely on copy-paste, one-size-fits-all housing designs, it results in standard, unappealing neighborhoods that fail to support local cultural lifestyles and community gathering spaces. To overcome these social barriers, housing programs must adopt a more inclusive and socially sensitive design process that actively includes future residents in the planning phase [34].

Housing affordability is not merely a function of policy options and market mechanism, socio-cultural features also play a substantial role in shaping housing preferences and acceptance [39]. The cultural preferences for housing choice in Pakistan are for low-rise, single-family housing with an emphasis on defiance against higher-density or high-rise development solutions of housing, even in urban areas where land scarcity is severe. Whereas, the community's preference against mortgage financing, driven by religious beliefs, mistrust of financial institutions, and fear of long-term debt, further limits demand for formal housing funding [40]. These factors led the decision-making and usually prioritize social and cultural requirements over quality of housing. Further, making these decisions eventually results in trade-offs between housing quality and other crucial needs. The socio-cultural dynamics influence both factors, i.e., housing demand and policy efficacy. This implies that emphasizing the integration of socio-cultural constraints is needed to achieve sustainable housing affordability.

The literature on housing affordability discloses that sustainable housing affordability in Pakistan is triggered by the interaction of governance failures, strict regulatory measures, market limitations, and socio-cultural dynamics. While the existing literature reported descriptive insights into these challenges, few assess their comparative influence on housing affordability outcomes. Most former research is of the view that these factors jointly shape sustainable housing affordability and access for low-income communities. This study accounts for this gap by combining policy and governance failure, regulatory and organizational barriers, market and financial limitations, and socio-cultural constraints into an integrated analytical framework. Using PLS-SEM, the study rationally examines the factors that influence sustainable housing affordability in Pakistan and presents evidence-based insights for policy reform and housing market interference [41,42].

2.6. Development of Hypotheses

While referring to the reviewed literature and Pakistan's recognized housing context, this study posits that sustainable housing affordability is influenced by governance failures, controlling rigidity, market constraints, and socio-cultural limitations. The weak policy application, fragmented organizational responsibilities, and regulatory ineffectiveness have historically hampered affordable housing delivery. Similarly, market and financial

limitations and entrenched socio-cultural choices may restrict access to sustainable housing affordability solutions. Accordingly, the following hypotheses are proposed:

H1. *Policy and governance ineffectiveness has a significant negative effect on housing affordability delivery.*

H2. *Regulatory and organizational hurdles have a significant adverse effect on housing affordability delivery.*

H3. *Market and financial limitations have a significant negative effect on housing affordability delivery.*

H4. *Socio-cultural limitations have a significant negative effect on housing affordability delivery.*

To empirically test the proposed hypotheses, the conceptual model operationalizes these barriers into measurable constructs within a Partial Least Squares Structural Equation Modeling (PLS-SEM) framework. The specific measurement items for each construct were adapted from the established literature to ensure content validity (Table 1). Specifically, the hypotheses are operationalized as follows: H1 is tested by evaluating the structural path from policy and governance failure (measured via six indicators: PGF1–PGF6) to the dependent variable. H2 is tested via the path from regulatory and institutional barriers (five indicators: RIB1–RIB5). H3 is tested via the path from market and financial constraints (six indicators: MFC1–MFC6). H4 is tested via the path from socio-cultural constraints (four indicators: SCC1–SCC4). A critical aspect of this study’s PLS-SEM design is the directional specification of the measurement models. The constructs policy and governance failure (PGF), market and financial constraints (MFCs), and the dependent variable affordable housing delivery (AHD) are modeled as reflective constructs, where the indicators act as interchangeable manifestations of the underlying latent variables. Conversely, regulatory and institutional barriers (RIBs) and socio-cultural constraints (SCCs) are conceptualized as formative constructs. This is theoretically justified because their respective indicators represent distinct, non-interchangeable dimensions (e.g., zoning restrictions versus strict bylaws) that collectively form the overall constraint, rather than being caused by it. The structural paths (β) and their significance are evaluated using a 5000-subsample bootstrapping procedure.

Table 1. Measurement items and construct operationalization.

Variables	Codes	Items	Sources
Policy and Governance Failure	PGF1	Majority of formal housing initiatives are out of the reach of the underprivileged	[13,43]
	PGF2	Policy discontinuity	Derived from [12]
	PGF3	Political agenda driven housing	Derived from [11]
	PGF4	Unrealistic targets	Derived from [11]
	PRF5	No low-income participation	Derived from [18,29,44]
	PGF6	Weak implementation	[16]

Table 1. Cont.

Variables	Codes	Items	Sources
Market and Financial Constraints	MFC1	Inadequate mortgage/financing institutions	[45]
	MFC2	Inadequate public funding	[45]
	MFC3	High cost of serviced land	[43,46]
	MFC4	High cost of sustainable building materials/technologies	[38]
	MFC5	Inadequate incentives for private investors	[13,47]
	MFC6	High interest rates	[17]
Regulatory and Institutional Barriers	RIB1	Weak enforcement	[23]
	RIB2	Delays in government approval process	[22]
	RIB3	Conflicting policies between local authorities and central government on planning	[22,23]
	RIB4	Strict housing bylaws	[46]
	RIB5	Zoning restrictions on land for affordable housing	[13,43,46]
Socio-Cultural Constraints	SCC1	Income inequality among households	[48]
	SCC2	Variability in housing needs of low-income people	[49]
	SCC3	Negative culture towards mortgage	[14,17]
	SCC4	Variability in housing affordability among low-income households	[49]
Affordable Housing Delivery	AHD1	There is a need to explore the pattern of trade-offs made by low-income households while making choices between housing and other needs.	Derived from [50]
	AHD2	Housing affordability and sustainability issues are not tackled together within the country.	[38,51]
	AHD3	For sustainable housing affordability, social and cultural sustainability is much more important along with environmental sustainability.	[39,52]
	AHD4	Affordable housing to be located within diverse and sustainable communities.	[4,10,53]

3. Materials and Methods

3.1. Research Design and Data Collection

Pakistan presents a highly relevant context for investigating affordable housing delivery due to its rapid urbanization rate, which is the highest in South Asia. In Pakistan, housing deficit exceeds 10 million units, with urban areas facing acute shortages. The province of Punjab, being the most populous and urbanized region, acutely reflects these systemic challenges. The province's housing market is characterized by a clear duality: a heavily regulated formal sector catering to middle- and upper-income groups, and a rapidly expanding informal sector where low-income households rely on self-built settlements on marginal lands. This localized context provides an ideal setting to empirically test the systemic institutional, regulatory, and socio-cultural barriers that hinder sustainable housing outcomes in developing economies.

This study adopted a quantitative research design to analytically examine the factors influencing delivery of affordable housing in Pakistan. The questionnaire was designed to record responses on policy and governance ineffectiveness, regulatory and organizational barriers, market and financial limitations, and socio-cultural constraints that shape the delivery of housing affordability (Table 1). Primary data were collected through a structured questionnaire with housing experts, urban planners, policymakers, and professionals engaged in housing development and mechanisms. A purposive sampling technique was employed to select participants possessing specialized knowledge of the housing sector. Geographically, the respondents were distributed across major urban centers in Punjab, including Lahore, to capture perspectives from the province's primary administrative and real estate hubs.

All factors were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Table 1). To ensure instrument reliability prior to full deployment, a pilot survey was conducted to assess the questionnaire's effectiveness and content validity, yielding a strong Cronbach's Alpha of 0.851.

Data were collected utilizing a dual-administration survey strategy to maximize geographical distribution across major urban centers in Punjab, including Lahore, and surrounding regions. Physical copies of the structured questionnaire were distributed directly within selected cities, while a digital counterpart was circulated via Google Forms to reach respondents in extended urban areas. A purposive sampling technique was employed to target individuals with specialized, practical knowledge of the housing sector. Initially, 283 professionals were approached, yielding 217 responses.

Prior to the PLS-SEM analysis, rigorous data preprocessing and coding procedures were implemented. The raw dataset was screened for missing values and unengaged response patterns (e.g., straight-lining). Following this data cleaning phase, 17 incomplete or invalid submissions were excluded, resulting in a final, robust sample of 200 valid responses.

The final sample is highly experienced, comprising 17% academic researchers with over 8 years of experience, 20% public sector professionals actively engaged in current housing programs, and 63% private sector practitioners with more than 5 years of industry engagement. While utilizing an expert-based sample inherently introduces potential selection bias by not directly surveying low-income end-users, this approach was deliberately chosen. Evaluating complex structural, governance, and regulatory barriers requires respondents with deep, systemic knowledge of institutional frameworks and housing delivery mechanisms, which these professionals uniquely possess. This sample size sufficient and exceeds the minimum requirements for Partial Least Squares Structural Equation Modeling (PLS-SEM) and provides enough statistical power for model estimation [41].

3.2. Justification for Using PLS-SEM

Initially, covariance-based structural equation modeling (CB-SEM) was employed using AMOS to test the proposed model. However, the analysis encountered several methodological issues, including non-positive definite covariance matrices, extremely poor model fit indices (high RMSEA and low CFI/TLI), excessively high inter-construct correlations, and overall model inadmissibility.

Given these limitations, and considering the exploratory nature of the study, the presence of formative constructs, moderate sample size, and potential non-normality in the data, Partial Least Squares Structural Equation Modeling (PLS-SEM) was deemed more appropriate. SmartPLS 4 (version 4.1.1.8) is well suited for complex models incorporating both formative and reflective constructs and emphasizes prediction and theory development rather than strict model fit. Accordingly, the analysis was conducted using SmartPLS, following the methodological guidelines recommended by Hair, Risher [41].

4. Results

4.1. Measurement Model Assessment

The measurement model was used separately for reflective and formative constructs, following established PLS-SEM analysis.

4.1.1. Reflective Constructs: Reliability and Convergent Validity

Internal consistency reliability for the reflective constructs (AHD, MFC, PGF) was evaluated using Cronbach's alpha and Composite Reliability (CR). All reflective constructs exceeded the recommended threshold of 0.70 for both metrics, indicating highly satisfactory reliability (Table 2). Convergent validity was assessed using the Average Variance Extracted (AVE). AHD and PGF achieved AVE values above the 0.50 threshold. While the MFC construct showed a marginally lower AVE of 0.476, its Composite Reliability is robust at 0.838. According to Fornell and Larcker [54], if the AVE is slightly below 0.5 but the CR exceeds 0.6, the convergent validity of the construct is considered adequate. Given its strong theoretical relevance and high Composite Reliability, the MFC construct was retained without modification.

Table 2. Measurement quality and collinearity assessment.

Construct	Type	Cronbach's Alpha	Composite Reliability (CR)	AVE	VIF (Range)
Affordable Housing Delivery (AHD)	Reflective	0.795	0.867	0.621	1.38–2.10
Market & Financial Constraints (MFCs)	Reflective	0.780	0.838	0.476	1.52–2.39
Policy & Governance Failure (PGF)	Reflective	0.767	0.846	0.503	1.21–4.96
Regulatory & Institutional Barriers (RIBs)	Formative	N/A	N/A	N/A	1.07–1.73
Socio-Cultural Constraints (SCCs)	Formative	N/A	N/A	N/A	3.40–3.87

4.1.2. Formative Constructs: Collinearity and Indicator Relevance

For the formative constructs (RIB and SCC), traditional reliability and AVE metrics are inapplicable as the indicators are not expected to covary [41]. Instead, quality was assessed via collinearity and indicator weights. Multicollinearity was evaluated using the Variance Inflation Factor (VIF). As shown in Table 2, all formative indicators exhibited VIF values well below the conservative threshold of 5.0 (ranging from 1.07 to 3.87), confirming the absence of collinearity issues.

4.2. Structural Model Assessment and Hypothesis Testing

The structural model was evaluated using bootstrapping with 5000 subsamples. Path coefficients, t-values, and p-values were examined to test the proposed hypotheses (Table 3).

Table 3. Structural path coefficients and hypothesis testing.

Hypothesis	Path	B	t-Value	p-Value	Decision
H1	Policy & Governance Failure → AHD	0.442	6.903	0.000	Supported
H2	Regulatory & Institutional Barriers → AHD	0.290	5.781	0.000	Supported
H3	Market & Financial Constraints → AHD	−0.029	0.521	0.602	Not Supported
H4	Socio-Cultural Constraints → AHD	0.407	7.248	0.000	Supported

The results indicate that policy and governance failure, regulatory and institutional barriers, and socio-cultural constraints have statistically significant effects on affordable

housing delivery. Market and financial constraints, however, do not exert a significant effect when governance and institutional factors are considered simultaneously.

4.3. Structural Model Assessment

The structural model was evaluated using bootstrapped path coefficients, *t*-values, and *p*-values obtained from 5000 resamples. The results indicate that policy and governance failure, regulatory and institutional barriers, and socio-cultural constraints exert statistically significant positive effects on affordable housing delivery. In contrast, market and financial constraints did not exhibit a statistically significant effect when modeled alongside governance, institutional, and socio-cultural factors (Figures 2 and 3).

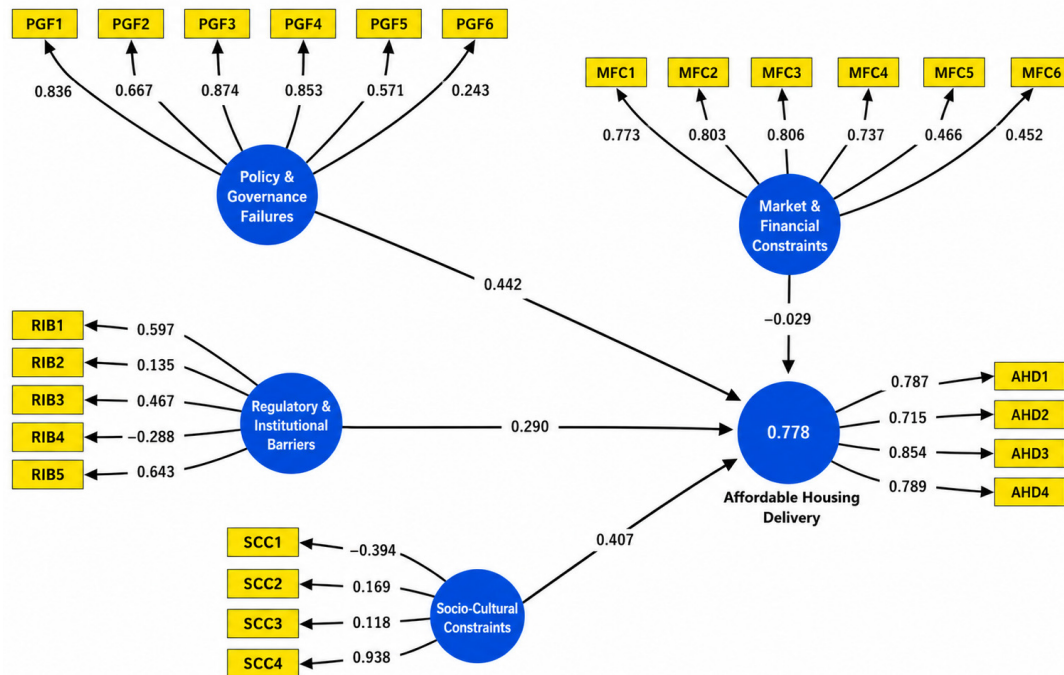


Figure 2. Structural model showing standardized path coefficients obtained through PLS-SEM bootstrapping.

Figure 2 presents the structural model results obtained through PLS-SEM bootstrapping. Policy and governance failure ($\beta = 0.442$, $p < 0.001$), regulatory and institutional barriers ($\beta = 0.290$, $p < 0.001$), and socio-cultural constraints ($\beta = 0.407$, $p < 0.001$) had a significant positive influence on sustainable housing affordability. In contrast, market and financial constraints did not show a significant effect ($\beta = -0.029$, $p = 0.602$). The model explained 77.8% of the variance in sustainable housing affordability. Bold arrows indicate statistically significant paths ($p < 0.05$).

Figure 3 presents the measurement and structural model results, including outer loadings for reflective constructs, outer weights for formative constructs, and structural path coefficients with bootstrapped *t*-values. For reflective constructs, all indicator loadings were statistically significant ($t > 1.96$), confirming indicator reliability. Most loadings exceeded the recommended threshold of 0.70, indicating adequate convergent validity. For formative constructs, outer weights were examined for significance and multicollinearity. The majority of indicators showed statistically significant weights, supporting their contribution to the respective constructs. Variance inflation factor (VIF) values were below the critical threshold, indicating no multicollinearity concerns.

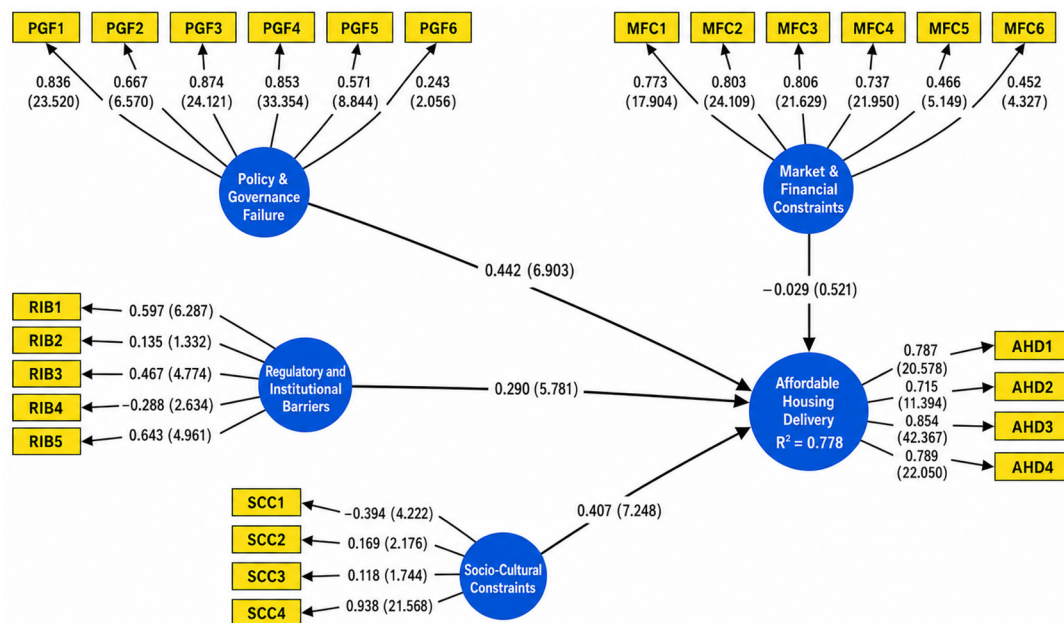


Figure 3. Measurement and structural model results showing outer loadings (reflective constructs), outer weights (formative constructs), and structural path coefficients with bootstrapped t-values.

4.4. Coefficient of Determination

The coefficient of determination (R^2) for affordable housing delivery was 0.778, indicating that approximately 77.8% of the variance in the outcome variable was explained by the four exogenous constructs. This level of explanatory power is considered substantial in social science and housing policy research.

5. Discussion and Policy Implications

5.1. Discussion of Findings

The result of analysis reveals that H1, H2, and H4, are accepted and indicating that affordable housing delivery in Pakistan is substantially molded by failure of governance, regulatory inflexibility, and socio-cultural limitations. These outcomes are aligned with earlier qualitative studies that indicated institutional flaws and social challenges as major obstacles to effective housing delivery [22]. The strong impact of policy and governance collapse exhibit the constant challenges of political interference, weak administration, and lack of continuousness in housing programs [12,16]. Similarly, governing and organizational difficulties such as strict bylaws, zoning limitations, and administrative gaps continue to increase housing costs and limit the supply [43]. Likewise, the findings are consistent with those of Baum-Snow and Duranton [55] that regulatory limitations and land-use conversion restrictions play a major role in reducing housing supply and affecting affordability.

Socio-cultural limitations also appeared as a major determinant, demonstrating that the cultural acceptability of high-rise housing developments, loans (either formal or informal), and alternative tenure characterize a major role in housing outcomes. Indications from other developing countries also confirm the institutional and socio-cultural limitations at play on top of purely financial factors [56]. Affordability remains the most decisive barrier to housing provision for low-income groups of urban settlements in Pakistan. In line with previous studies [13,17], the findings affirm that even the most basic forms of housing units constructed by public or private agencies remain above the monetary reach of the urban poor. Conversely, this research reveals that affordability limitations are not solely a function of market forces but are deeply rooted in policy mis-prioritization, organizational ineffectiveness, and weak governance formations. Regardless of series of housing programs

and significant public expenditure, the existing gap between housing demand and supply implies that funds have been inappropriately allotted and such practice has aggravated the housing crisis. Rising housing costs further offer speculative opportunities—under this factor the households liquidate assets to meet instant needs, emphasizing market biases [57]. Moreover, housing interventions that overlook community engagement and local socio-economic impact tend to be costly, slow to deliver, and not aligned with residents' needs [18]. Prolonged project timelines disadvantage the urban poor, who require immediate access to shelter and cannot afford to lock limited financial resources into long-term housing schemes. This procedural mismatch eventually benefits investors/speculators rather than envisioned beneficiaries. This suggests the urgent need for governance-led, organizationally coordinated, and socially receptive housing interventions.

On the contrary, H3 was not supported, proposing that market and financial limitations alone do not substantially guide affordable housing delivery once governance and organizational factors are reported. This research did not find a significant effect from market and financial limitations once governance and organizational factors were controlled for; the previous literature presents diverse evidence. The research from more institutionally effective contexts highlight the role of credit terms and conditions, mark-up rates, and cost of construction in determining affordability [58,59]. Though, consistent with evolving evidence from developing countries, this research proved the view that ineffective governance, regulatory inflexibility, and socio-cultural unacceptability can dominate financial mechanisms, translating market-based housing options ineffective [55,56,60]. As Alasmari [61] termed, housing affordability holistically necessitates joined approaches that couple market factors with governance and organizational reforms, signifying that isolated market restrictions may not meaningfully explain affordability matters without reflecting broader institutional contexts. These findings challenge economics-centric policy narratives and stress the supremacy of structural and institutional barriers. Though market and economic limitations are often quoted as impediments to affordable housing, a recent study reported that institutional quality, regulatory contexts, and urban governance may exert an overriding effect on affordability outcomes, sometimes diminishing the isolated statistical impact of traditional market limitations in multivariate models [60].

5.2. Policy Implications

The results of this study suggest that for efficient affordable housing delivery in Pakistan there is a need to shift beyond financial mediations toward complete governance and organizational reforms. Housing policies should be segregated from political phases through steady and visible governance structures. Regulatory improvement and simplified approval procedures can substantially reduce construction costs and increase housing supply. Enhanced coordination among federal, provincial, and local institutions is necessary to reduce policy clashes and implementation gaps. Moreover, housing programs must feature socio-cultural reflections through community involvement and awareness approaches to improve acceptance of affordable housing programs.

5.3. Contribution of the Study

This study contributes to the housing literature by empirically demonstrating that the housing affordability and the associated challenges of affordable housing delivery in Pakistan are multifaceted and structurally rooted. Methodologically, the study advances the existing literature by applying PLS-SEM to fit in formative and reflective constructs within a single framework, posing a robust method for analyzing complex housing policy settings in developing countries.

6. Conclusions

This study empirically investigated the complex, interconnected barriers impeding affordable housing delivery in developing economies, utilizing Pakistan as a representative case study. Through a rigorous Partial Least Squares Structural Equation Modeling (PLS-SEM) framework, the research demonstrated that policy and governance failures (H1), regulatory and institutional barriers (H2), and socio-cultural constraints (H4) act as primary, significant impediments to sustainable housing outcomes. The findings confirm that the housing crisis in rapid-growth urban centers is fundamentally an institutional and social challenge rather than an isolated economic phenomenon.

Crucially, the structural model revealed a counter-intuitive reality: market and financial constraints (H3) do not significantly dictate affordable housing delivery when evaluated alongside severe institutional dysfunction. This lack of support for H3 highlights a profound structural and human reality prevalent in the Global South. Formal financial mechanisms, such as mortgage availability and interest rates, are largely irrelevant to marginalized populations who are systematically excluded from formal banking and rely instead on informal, incremental, and self-built housing strategies. The results suggest that until exclusionary regulatory frameworks such as rigid zoning laws and inflexible building bylaws are dismantled, and governance failures are rectified, purely financial interventions will remain structurally ineffective and out of reach for the most vulnerable populations. These findings offer highly transferable insights for other developing countries grappling with rapid urbanization, informal settlements, and massive housing deficits. For international housing policy and global development agencies striving to achieve Sustainable Development Goal (SDG) 11, this study signals the urgent need for a paradigm shift. Global and national housing strategies must pivot away from predominantly finance-centric interventions, which historically benefit middle-income demographics, and instead prioritize deep, systemic governance reform, regulatory simplification, and the integration of localized socio-cultural realities into policy design.

Regardless of its robust methodological approach and significant contributions, this study acknowledges certain limitations that present avenues for future research. First, the reliance on an expert-based sample (N = 200)—while highly effective for evaluating complex systemic, structural, and regulatory frameworks—inherently lacked the direct, lived experiences of low-income end-users. Future research should integrate mixed methods approaches that capture the qualitative, human perspectives of marginalized households to complement this systemic overview. Secondly, the cross-sectional nature of the data captures a specific temporal snapshot of the housing sector. Future longitudinal studies are recommended to observe how shifts in political regimes, evolving macro-economic conditions, and subsequent institutional reforms dynamically impact affordable housing delivery over time.

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Data Availability Statement: The primary data presented in this study is available on request from the corresponding author. The data is not publicly available due to the privacy and anonymity of the participants involved in housing expert surveys.

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