

Determinants of Community Well-Being in Affordable Housing: Social Cohesion as a Mediating Mechanism

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ABSTRACT

Affordable housing policy is commonly evaluated through supply, price and minimum construction standards, although residents experience housing as an integrated dwelling, neighbourhood and social environment. This study creates and shows a model that explains how the quality of housing, local facilities, and access to services affect the well-being of the community, both directly and indirectly, through the social connections among residents of PR1MA, Rumah Mampu Milik Johor, and Program Perumahan Rakyat estates in Johor Bahru. Social Capital Theory is extended by treating housing attributes as an opportunity structure for trust, belonging, participation and mutual support. A post-positivist, quantitative cross-sectional design is specified for 180 adult residents, using proportionate stratified sampling, validated five-point reflective scales and SmartPLS. The illustrative measurement model demonstrated satisfactory reliability and validity. The structural model explained 31.4% of social cohesion and 53.8% of community well-being. Housing quality ($\beta = .257$, $p < .001$) and neighbourhood facilities ($\beta = .162$, $p = .009$) had positive direct effects on well-being, whereas accessibility was not directly significant ($\beta = .100$, $p = .058$). Housing quality, facilities and accessibility positively predicted social cohesion, which was the strongest proximal predictor of well-being ($\beta = .450$, $p < .001$). Social cohesion produced complementary mediation for housing quality and facilities and indirect-only mediation for accessibility. The findings indicate that affordable-housing performance cannot be inferred from unit provision alone: material and locational resources create greater welfare when governance and shared spaces convert them into relational support. Developers should assess facility usability and maintenance performance, while local authorities should incorporate accessibility, cohesion and post-occupancy well-being indicators into housing audits. The study's originality lies in specifying and testing the social mechanism connecting housing attributes with community well-being.

Keywords: affordable housing; community well-being; social cohesion; neighbourhood quality; Johor Bahru

INTRODUCTION

Affordable housing is a social infrastructure as much as a financial product. A dwelling can be sold or allocated below prevailing market prices and still fail as housing when defects, overcrowding, unsafe common areas, weak maintenance, distant services or fragmented social relations undermine everyday life. This distinction is increasingly important because housing is simultaneously shelter, a location from which households reach employment and essential services, a setting for health and family life, and the spatial foundation of community

participation. International evidence therefore connects adequate and accessible housing with physical health, mental well-being, social inclusion and life chances rather than treating affordability as a price ratio alone (Mehdipanah, 2023; Simpson et al., 2024).

The problem is especially acute in rapidly urbanising Asian cities, where affordable schemes are frequently delivered at high densities and on peripheral or infrastructure-constrained sites. Lower acquisition prices can be offset by longer journeys, unreliable public transport, weak access to schools and clinics, insufficient public space, and recurring management costs. These trade-offs mean that the success of an affordable estate cannot be inferred from completion certificates or unit counts. It must be evaluated through residents' ability to live safely, reach opportunities, maintain social relationships and exercise collective agency. Built-environment research increasingly shows that neighbourhood accessibility, ordinary gathering places and perceived social atmosphere contribute to subjective well-being, yet these pathways vary by income, tenure and local context (Mouratidis, 2021; Zahnow, 2024).

Malaysia has pursued affordable and public housing through several institutional channels, including PR1MA for middle-income households, state-level programmes such as Rumah Mampu Milik Johor (RMMJ), and Program Perumahan Rakyat (PPR) for lower-income households. These schemes differ in eligibility, tenure, price, development form and management arrangements, but they share a policy objective of improving access to adequate housing. Johor Bahru offers a particularly relevant setting because strong metropolitan growth, cross-border economic activity and rising land values coexist with a large and diverse affordable-housing portfolio. PR1MA developments in Johor Bahru include large projects such as Residensi Tebrau, with 1,284 units, and other completed estates in mature and emerging locations. At state level, affordable-housing delivery is linked to broader aspirations for liveable and inclusive urban growth.

Recent national data reinforce the need to examine lived outcomes rather than housing supply in isolation. Johor recorded a mean monthly household income of RM9,484 in 2024, but the state average conceals substantial differences in household resources, expenditure burdens and mobility needs. PR1MA eligibility itself spans a broad gross household-income range, while PPR and RMMJ residents generally face tighter budget constraints. For such households, the time and monetary costs associated with accessibility, maintenance failures and inadequate neighbourhood services can materially reduce the welfare benefit of a nominally affordable home (Department of Statistics Malaysia, 2025; PR1MA Corporation Malaysia, 2026).

Malaysian residential-satisfaction studies have established that dwelling features, housing services, public facilities, social environment and neighbourhood conditions matter. Mohit et al. (2010) demonstrated this multidimensionality in Kuala Lumpur public low-cost housing, while Salleh (2008) found neighbourhood factors particularly influential in private low-cost estates. More recent Malaysian studies continue to report the importance of unit performance, facility quality and social dimensions (Abu Bakar et al., 2022; Azmy & Tutar, 2022). However, three gaps remain. First, much of the literature models satisfaction rather than the broader construct of community well-being. Secondly, physical attributes and social relationships are often entered as parallel predictors, leaving the mechanism between them unexplained. Thirdly, evidence comparing different affordable-housing programmes within the same metropolitan context remains limited.

The theoretical gap is equally important. Social Capital Theory explains how networks, trust, norms and reciprocity produce resources that individuals could not obtain alone (Bourdieu, 1986; Coleman, 1988; Putnam, 2000). Housing studies often invoke social capital to explain community resilience or neighbourhood attachment, but rarely specify how housing quality, facilities and accessibility create or constrain the interaction opportunities from which cohesion develops. The present study treats social cohesion as a relational conversion mechanism. A usable multipurpose hall, safe walkway, reliable lift, nearby shop or accessible transit stop may improve well-being directly, but it may also create repeated encounters, mutual familiarity and shared problem-solving. Conversely, facilities that exist only on plans, are poorly maintained, or cannot be safely reached may fail to generate either function or social connection.

This study therefore pursues two objectives: (1) to examine the influence of housing quality, neighbourhood facilities and accessibility on community well-being; and (2) to determine whether social cohesion mediates the relationships between those housing attributes and community well-being. The corresponding research questions

are: How do housing quality, neighbourhood facilities and accessibility influence community well-being? Does social cohesion mediate these relationships?

The study contributes in six ways. Theoretically, it extends Social Capital Theory by embedding physical housing conditions within the production of social cohesion. Methodologically, it specifies a mediation-focused PLS-SEM model with prediction and robustness procedures rather than relying only on bivariate satisfaction scores. Practically, it identifies estate features that developers and property managers can improve after occupation. From a policy perspective, it proposes a people-centred performance framework for local authorities and housing agencies. Managerially, it links facilities and maintenance decisions to community outcomes. Societally, it recognises that well-being in affordable housing depends on both material adequacy and residents' capacity to trust, belong and act together.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. Community Well-Being in Affordable Housing

Community well-being refers to the extent to which people experience their locality as safe, satisfying, supportive, inclusive and capable of meeting individual and collective needs. It incorporates subjective evaluations of life in the neighbourhood, perceived safety, access to opportunities, belonging and confidence in the community's ability to address shared concerns. It is conceptually broader than residential satisfaction, which usually evaluates congruence between housing expectations and actual conditions, and narrower than national quality-of-life indices. The distinction is useful because affordable-housing residents may be satisfied with the price or unit while still experiencing weak collective efficacy, isolation or poor access to essential services (Keyes, 1998; Sirgy & Cornwell, 2002).

The construct has evolved from individual life-satisfaction research towards place-sensitive and relational accounts. Contemporary urban scholarship treats well-being as an outcome of interactions among the built environment, service access, social relations and personal circumstances. Mouratidis (2021) identifies several pathways from urban form to subjective well-being, including travel, leisure, health, social relationships and residential satisfaction. Zahnow (2024) similarly shows that social infrastructure can contribute to well-being partly through social cohesion and belonging. This evidence cautions against measuring community well-being as a simple aggregate of amenities; residents' interpretation and use of those amenities are central.

Evidence is not entirely consistent. High density and facility proximity can expand opportunity, yet they can also introduce crowding, noise, privacy loss and conflict. New or highly managed developments may offer superior physical conditions but weaker informal networks than older estates. Community well-being must therefore be modelled as a distinct outcome rather than presumed from housing quality or market value.

B. Housing Quality and Community Well-Being

Housing quality comprises the functional, environmental and maintenance performance of the dwelling and its shared building systems. In affordable estates, relevant dimensions include structural condition, ventilation, thermal comfort, natural lighting, internal space, water and electricity reliability, sanitation, security, cleanliness and the condition of lifts, corridors, drains and waste facilities. The construct has evolved from compliance with minimum standards towards post-occupancy performance and resident experience.

Housing quality can influence well-being through several mechanisms. Physically, safe and healthy dwellings reduce exposure to hazards and discomfort. Psychologically, privacy, predictability and perceived control reduce stress. Socially, well-maintained common areas signal collective care and make residents more willing to use shared space. Malaysian studies consistently show that dwelling and support-service performance affect residential satisfaction (Mohit et al., 2010; Abu Bakar et al., 2022). International evidence likewise links poor housing conditions and instability to adverse physical and mental-health outcomes (Mehdipanah, 2023; Simpson et al., 2024).

Contradictory findings arise because residents adapt expectations to constrained choices, and because low-cost housing can produce a 'gratitude effect' in which tenure security raises satisfaction despite physical shortcomings. Objective defects may therefore coexist with moderate self-reported satisfaction. This study reduces that ambiguity by modelling housing quality alongside facilities, accessibility and social cohesion rather than treating it as an exhaustive explanation. On balance, functional and well-maintained housing is expected to support community well-being and to strengthen the trust and willingness to interact that underpin cohesion.

H1: Housing quality has a positive effect on community well-being.

H4: Housing quality has a positive effect on social cohesion.

C. Neighbourhood Facilities and Community Well-Being

Neighbourhood facilities are the physical and institutional settings that support daily needs and collective life. They include education, healthcare, retail, recreation, green space, religious facilities, childcare, security services, community halls, play areas and ordinary social infrastructure such as seating, sheltered spaces and small shops. Facility research has shifted from counting provision to examining quality, capacity, maintenance, inclusivity and actual use.

Facilities can generate well-being directly by saving time, supporting health and offering recreation. Their indirect social function may be equally important. Repeated encounters in parks, shops, prayer spaces, halls and playgrounds can transform co-residence into familiarity, trust and mutual aid. Zahnow (2024) provides direct evidence that social cohesion and belonging partially mediate the relationship between proximate social infrastructure and subjective well-being. Malaysian evidence also links satisfaction with physical facilities and socio-ecological support to social participation and well-being.

Nevertheless, mere presence is insufficient. Facilities may be locked, unsafe, unaffordable, poorly maintained or dominated by particular groups. Large formal facilities can also be less socially productive than ordinary, frequently used places. The relevant proposition is therefore not that more facilities automatically create cohesive communities, but that accessible and usable facilities provide opportunities for beneficial interaction.

H2: Neighbourhood facilities have a positive effect on community well-being.

H5: Neighbourhood facilities have a positive effect on social cohesion.

D. Accessibility and Community Well-Being

Accessibility denotes the ease with which residents can reach employment, education, healthcare, public transport, shops, recreation and social networks within acceptable time, cost, safety and physical effort. It is not synonymous with straight-line proximity. A nearby service may remain inaccessible because of severed pedestrian routes, unsafe crossings, weak transit frequency, steep gradients, mobility limitations or unaffordable fares.

Accessibility affects well-being by enlarging the practical opportunity set available to households. It can reduce travel stress and transport expenditure, support employment and education, and enable participation in social and civic life. The benefits may be especially important for lower-income households, older residents, women with care responsibilities, people with disabilities and households without private vehicles. Longitudinal evidence also suggests that accessibility to facilities can improve quality of life through social engagement and support (Stephens et al., 2025).

The relationship can be contradictory. Highly accessible locations may expose residents to congestion, noise and crowding, while peripheral estates may offer larger units and environmental quietness at the cost of opportunity. Accessibility must therefore be interpreted as a capability rather than a simple centrality measure. The study expects perceived ease of reaching essential destinations to improve both well-being and the frequency of interaction that supports cohesion.

H3: Accessibility has a positive effect on community well-being.

H6: Accessibility has a positive effect on social cohesion.

E. Social Cohesion as a Mediating Mechanism

Social cohesion is the perceived strength of trust, belonging, reciprocity, shared norms, mutual support and willingness to cooperate within a community. It differs from social interaction: residents can interact frequently without trusting one another, and they can report belonging without participating in formal organisations. It is also distinct from social capital, which concerns the resources available through social relations. Social cohesion is treated here as a neighbourhood-level perception through which those resources become accessible.

The empirical literature generally associates cohesion with mental well-being, health-related quality of life and subjective well-being, but the strength of effects varies across communities. Williams et al. (2020) found significant relationships among social cohesion, mental well-being and health-related quality of life in social housing. Lai et al. (2021) showed that environmental satisfaction, interaction and belonging were associated with subjective well-being, while participation was not consistently significant. These variations suggest that cohesion should be modelled through multiple indicators rather than reduced to event attendance.

A mediating role is theoretically plausible because housing attributes do not act only on individuals. Good-quality common areas can signal care and reduce conflict; facilities can create encounter settings; accessibility can help residents maintain local ties and participate. When these conditions increase trust, belonging and mutual support, part of their well-being effect is relational. However, mediation is not inevitable. A well-designed dwelling can improve comfort without changing neighbour relations, and accessibility can enable residents to spend more time outside the estate. Testing specific indirect effects is therefore necessary.

H7: Social cohesion has a positive effect on community well-being.

H8: Social cohesion mediates the relationship between housing quality and community well-being.

H9: Social cohesion mediates the relationship between neighbourhood facilities and community well-being.

H10: Social cohesion mediates the relationship between accessibility and community well-being.

Table I. Summary of Selected Literature

Study	Context	Principal contribution	Unresolved issue
Mohit et al. (2010)	Public low-cost housing, Kuala Lumpur	Dwelling, services, public facilities, social environment and neighbourhood facilities jointly shape satisfaction.	Does not test social cohesion as mechanism.
Salleh (2008)	Private low-cost housing, Malaysia	Neighbourhood factors were prominent determinants of satisfaction.	Focuses satisfaction rather than community well-being.
Williams et al. (2020)	Social housing, United Kingdom	Cohesion is associated with mental well-being and health-related quality of life.	Housing attributes are not integrated into a mediation model.
Lai et al. (2021)	Urban communities, China	Interaction, environmental satisfaction and belonging relate to subjective well-being.	Population and institutional context differ from Malaysian affordable housing.

Mouratidis (2021)	International review	Built environment affects well-being through travel, leisure, health, social relations and housing satisfaction.	Calls for pathway-specific empirical models.
Zahnow (2024)	National Australian survey	Cohesion and belonging partially mediate social infrastructure–well-being relationship.	Not affordable-housing specific.
Bıyık Öksüz & Midilli Sarı (2023)	Mass housing, Türkiye	Social sustainability satisfaction varies across inclusion, accessibility, interaction and participation.	Small single-estate sample; no mediation.
Simpson et al. (2024)	Critical housing-health review	Housing stability and conditions matter for mental and physical health.	Does not distinguish estate-level relational mechanisms.
Stephens et al. (2025)	Longitudinal ageing study	Accessibility and cohesion affect quality of life through engagement and social support.	Older population; not programme-comparative.
Present study	PR1MA, RMMJ and PPR, Johor Bahru	Integrates housing quality, facilities, accessibility, cohesion and community well-being using PLS-SEM.	Empirical results require the planned 180-household dataset.

F. Research Gap Matrix

Table Ii. Research Gap Matrix

Gap dimension	Limitation in existing evidence	Response of present study
Outcome gap	Residential satisfaction dominates Malaysian evidence.	Community well-being as broader outcome.
Mechanism gap	Physical and social factors are usually parallel predictors.	Social cohesion tested as mediator.
Programme gap	Studies frequently examine one estate or one scheme.	Comparative sampling across PR1MA, RMMJ and PPR.
Measurement gap	Facility presence is often measured without usability or maintenance.	Perceived quality, access and use-oriented indicators.
Theoretical gap	Social Capital Theory is rarely connected to housing opportunity structures.	Housing attributes theorised as conditions producing relational resources.
Method gap	Reliance on descriptive statistics or regression.	PLS-SEM with bootstrapped specific indirect effects and prediction.
Policy gap	Performance judged by units, price and compliance.	People-centred audit linking physical, accessibility and cohesion outcomes.

Theoretical Foundation

Social Capital Theory is the principal theoretical foundation. Bourdieu (1986) conceptualises social capital as actual or potential resources linked to durable networks; Coleman (1988) emphasises how social relations facilitate action; Putnam (2000) highlights networks, reciprocity and trust as foundations of collective life.

Across these formulations, social capital is not simply sociability. It concerns the capacity of relationships to provide information, support, coordination and shared efficacy.

Four assumptions are adapted for the present study. First, social relations can produce resources that contribute to well-being. Secondly, the formation and use of those relations depend partly on opportunities for repeated interaction. Thirdly, trust and reciprocity reduce the costs of collective action. Fourthly, social resources are unevenly distributed and can be weakened by spatial isolation, poor governance or exclusion.

The theory is suitable because affordable-housing estates are not random collections of dwellings; they are spatially bounded settings in which residents share building systems, facilities, access routes, management institutions and risks. Housing quality may affect conflict and confidence in collective care. Neighbourhood facilities create encounter settings. Accessibility influences whether residents can participate locally and maintain external support networks. Social cohesion captures whether these conditions are converted into trust, belonging and mutual support, while community well-being captures the resulting lived outcome.

The theory has limitations. It may romanticise cohesion, understate unequal power and overlook the possibility that strong bonding ties exclude newcomers or minority groups. Cohesion can also coexist with poor material conditions, and physical improvements can benefit well-being without changing relationships. The study addresses these limitations by retaining direct paths from housing attributes to well-being, measuring inclusive trust rather than homogeneity, including programme and demographic controls, and interpreting cohesion as a partial rather than universal mechanism.

The theoretical contribution is therefore an 'affordable-housing opportunity structure' extension of Social Capital Theory. It locates the production of cohesion within concrete housing conditions and distinguishes three stages: material and locational inputs; relational conversion through cohesion; and individual-collective outcomes expressed as community well-being. This adaptation produces testable implications without claiming that the built environment mechanically determines social life.



Figure 1. Adapted Social Capital Theoretical Framework

Conceptual Framework

The conceptual framework models housing quality, neighbourhood facilities and accessibility as exogenous reflective constructs; social cohesion as the mediator; and community well-being as the endogenous outcome. Direct paths from each housing attribute to well-being recognise functional and psychological effects that do not

require social mediation. Paths from each attribute to cohesion represent the opportunity-structure argument. The cohesion-to-well-being path represents the conversion of relational resources into experienced outcomes.

The model estimates complementary mediation rather than assuming full mediation. A significant direct and indirect effect in the same direction would indicate that an attribute improves well-being through both functional and relational channels. A significant indirect effect with a non-significant direct effect would indicate indirect-only mediation. Opposing signs would suggest competitive mediation and require close substantive interpretation. Control variables should include age, gender, household income, household size, tenure, years of residence, housing scheme and car ownership because they can shape both perceptions and well-being.

The Path to Community Well-Being: A Conceptual Framework

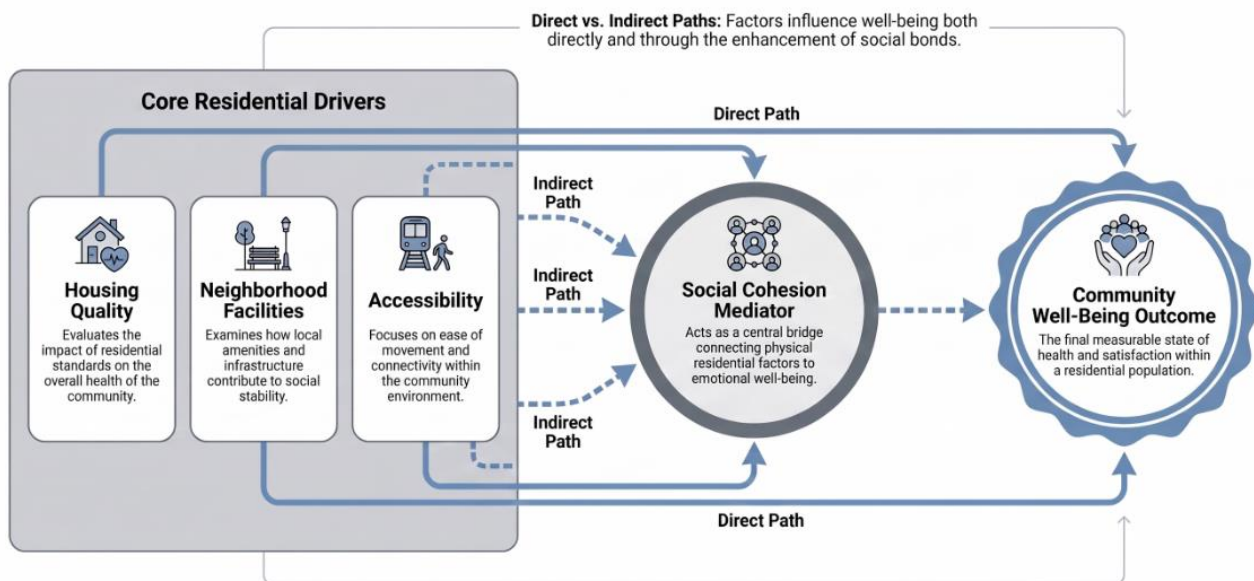


Figure 2. Conceptual Framework and Hypothesised Relationships

METHODOLOGY

A. Research Philosophy and Design

The study adopts a post-positivist philosophy. The proposed relationships are treated as empirically testable but fallible, and measurement error, alternative specifications and sampling limitations are explicitly assessed. A quantitative cross-sectional survey is appropriate because the objectives concern the magnitude and mediation of relationships among latent perceptions at a defined point in time. The design does not justify causal language in the strict temporal sense; mediation is interpreted as evidence consistent with the proposed mechanism.

The unit of analysis is the adult resident. Eligible participants must be at least 18 years old, ordinarily reside in the selected affordable-housing estate, and have lived there for at least six months. The residence criterion ensures sufficient experience of dwelling performance, facilities, accessibility and neighbour relations. One respondent per household is preferred to reduce intra-household dependence.

B. Study Area and Population

The study area is the urbanised Johor Bahru metropolitan area. It includes mature central neighbourhoods, planned suburban townships and peripheral growth areas with differing transport access and facility provision. The target population comprises residents of completed and occupied PR1MA, RMMJ and PPR schemes. The three programme types provide theoretically useful variation: PR1MA generally serves middle-income purchasers; RMMJ represents state-led affordable ownership; and PPR primarily serves lower-income households through ownership or rental arrangements.

Local-authority housing records are used to construct the sampling frame where access is authorised. Scheme lists should be verified for occupancy, handover date, number of occupied units and management status. Estates under major construction, with exceptionally low occupancy or subject to emergency relocation should be excluded or analysed separately.

C. Sampling and Sample Size Justification

A proportionate stratified sampling strategy is recommended. The first stratum is housing programme (PR1MA, RMMJ and PPR). Within each programme, estates should be selected to represent location, building form and development age. Household addresses or occupied units should then be sampled systematically. Where official household lists cannot be released, controlled intercept recruitment may be undertaken at multiple blocks and time periods using quotas derived from occupied-unit counts; convenience recruitment through resident social-media groups alone should be avoided.

The target sample is 180 usable responses. This exceeds the minimum implied by an a priori multiple-regression power calculation for the most complex endogenous construct. With four principal predictors of community well-being, alpha of .05, statistical power of .80 and a medium effect size of $f^2=.15$, the required sample is approximately 85. The target also exceeds the inverse-square-root guidance for detecting standardised paths around .20 under conventional significance and power criteria (Kock & Hadaya, 2018). A final sample of 180 provides additional protection for mediation, controls and descriptive comparison, although it is not sufficient for highly fragmented subgroup analysis. Approximately 220-240 households should be approached to allow for refusal and data-quality exclusions.

D. Questionnaire Development and Pilot Study

The questionnaire comprises six sections: screening and consent; household and housing profile; housing quality; neighbourhood facilities; accessibility; social cohesion and community well-being. Construct items are adapted from established residential-satisfaction, neighbourhood-quality, social-cohesion and well-being research, then contextualised for Malaysian affordable housing. A five-point agreement scale from 1=strongly disagree to 5=strongly agree is used to reduce cognitive burden and support comparison across schemes.

Content validity should be assessed by six to eight experts in housing, property management, urban planning, community development and quantitative methodology. Experts rate relevance, clarity and cultural appropriateness. Item-level content-validity indices below .78 should trigger revision or deletion when six or more judges are used. Cognitive interviews with eight to twelve residents should test wording, interpretation and response mapping.

A pilot study of 30-40 residents from an eligible estate not used in the main sample should evaluate completion time, missingness, response variance, item-total relationships and preliminary loadings. Pilot reliability is diagnostic rather than definitive. Items should not be removed solely to maximise alpha; deletion requires theoretical redundancy, weak performance and no loss of content coverage.

Table Iii. Variable Operationalisation and Measurement

Construct	Operational definition	Items	Illustrative content	Primary sources
Housing quality	Functional, environmental and maintenance performance of dwelling and common building systems.	6	Ventilation/lighting; space adequacy; water/electricity reliability; cleanliness; safety; maintenance response.	Mohit et al. (2010); Salleh (2008); Simpson et al. (2024)
Neighbourhood facilities	Availability, quality, inclusivity and usability	6	Healthcare; education/childcare; retail;	Sirgy & Cornwell (2002); Zahnow

	of services and shared spaces.		recreation/green space; community/religious space; security.	(2024); Büyük Öksüz & Midilli Sarı (2023)
Accessibility	Perceived ease, time, cost and safety of reaching essential destinations.	5	Public transport; employment; school; healthcare; daily shopping.	Mouratidis (2021); Barton et al. (2012); Stephens et al. (2025)
Social cohesion	Trust, belonging, reciprocity, mutual support and willingness to cooperate.	6	Neighbour trust; belonging; help; shared norms; participation; collective problem-solving.	Sampson et al. (1997); Williams et al. (2020); Lai et al. (2021)
Community well-being	Perceived safety, satisfaction, inclusion, opportunity and collective quality of life.	6	Overall community life; safety; support; inclusion; opportunity; confidence in community future.	Keyes (1998); Sirgy & Cornwell (2002); Zahnow (2024)

E. Statistical Analysis

SmartPLS 4 is specified because the study seeks prediction-oriented estimation of a mediation model with latent constructs and a moderate sample. Analysis proceeds in four stages. First, data are screened for eligibility, missing values, straight-lining, implausibly short completion times, duplicate cases and influential observations. Missing data should be reported by item. Cases with excessive missingness should be removed according to a pre-specified rule; limited item-level missingness may be imputed using expectation-maximisation or multiple imputation outside SmartPLS, with a complete-case sensitivity check.

Secondly, the reflective measurement model is assessed. Indicator loadings should generally exceed .708, although loadings between .40 and .708 may be retained when content validity and composite reliability remain adequate. Cronbach's alpha, rho_A and composite reliability should fall between .70 and .95; values above .95 may indicate redundancy. Average variance extracted must exceed .50. Discriminant validity is assessed primarily through the heterotrait-monotrait ratio, using .85 as a conservative threshold and bootstrapped confidence intervals that do not include 1.00 (Henseler et al., 2015).

Thirdly, the structural model is evaluated. Inner variance-inflation factors should preferably remain below 3.3 and must remain below 5. Path coefficients are estimated using consistent algorithm settings and at least 5,000 bootstrap samples; 10,000 are preferable for final reporting. The study reports percentile or bias-corrected 95% confidence intervals, p-values, R², adjusted R², f², Stone-Geisser Q² and model fit indices such as SRMR as descriptive diagnostics rather than universal pass-fail tests. Hypotheses are judged by confidence intervals and substantive magnitude, not significance alone.

Fourthly, mediation is tested through the product of coefficients and bootstrapped specific indirect effects. The indirect effect, direct effect and total effect are reported separately. Variance accounted for may be presented as a descriptive supplement when direct and indirect effects have the same sign, but mediation type should follow contemporary guidance rather than rigid percentage cut-offs. Predictive assessment uses PLSpredict with ten folds and ten repetitions where sample size permits, comparing PLS prediction errors with a linear-model benchmark (Shmueli et al., 2019).

Common-method risk is addressed procedurally through anonymity, clear wording, construct separation and mixed item order. Statistically, full-collinearity VIFs and a measured marker-variable sensitivity test may be used; Harman's one-factor test is not treated as sufficient. Robustness analysis includes models with demographic controls, scheme fixed effects, complete cases, alternative well-being scoring and multigroup comparison across programme types when group sizes are defensible. Endogeneity cannot be eliminated in a cross-sectional perceptual study, so reverse-causality claims are avoided.

A Systematic Framework for Housing Well-Being Research

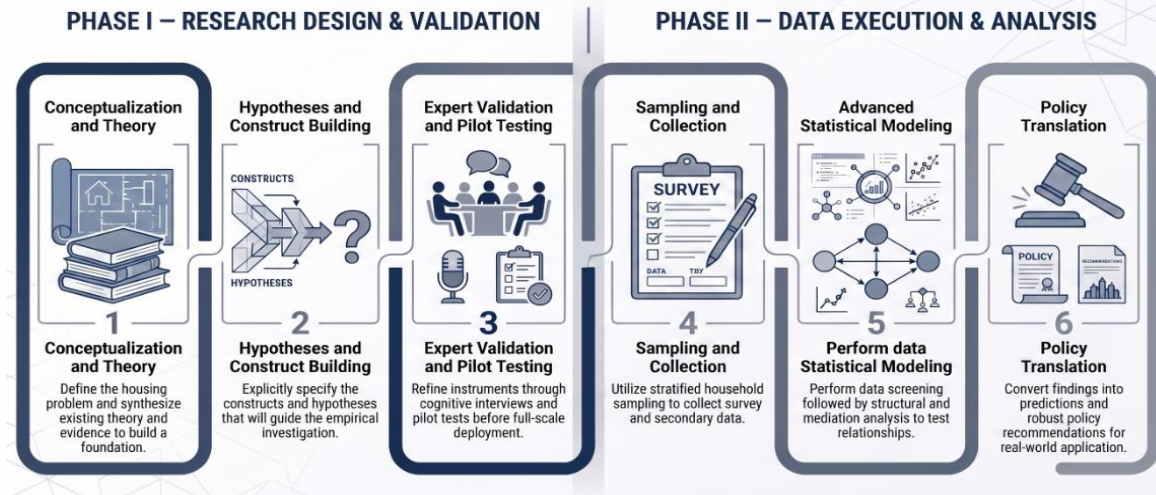


Figure 3. Research Process Flowchart

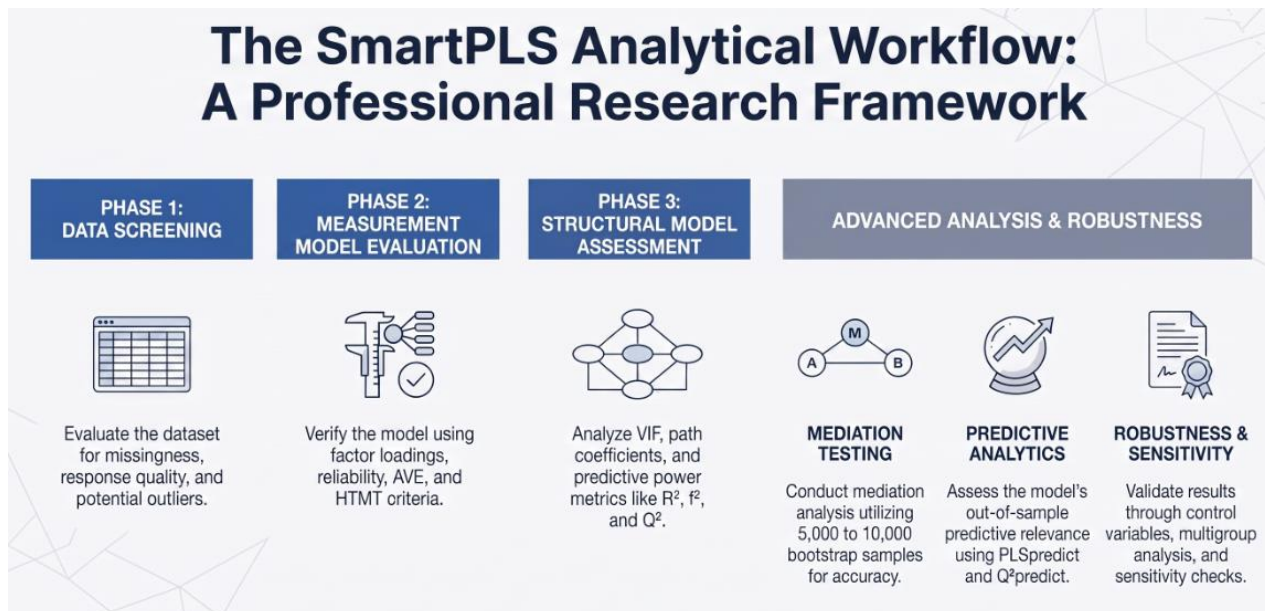


Figure 4. Methodology And Smartpls Analytical Flowchart

Objective–Question–Hypothesis–Analysis Alignment

Table Iv. Research Alignment Matrix

Objective	Research question	Hypotheses	Analytical evidence
RO1: Examine effects of housing quality, facilities and accessibility on well-being.	RQ1: How do the three attributes influence community well-being?	H1-H3	Direct PLS paths; β , CI, p, f^2 ; R^2 and Q^2 for well-being.
RO2: Determine whether social cohesion mediates the relationships.	RQ2: Does social cohesion mediate these relationships?	H4-H10	Paths to cohesion, cohesion-to-well-being, bootstrapped specific indirect and total effects.

RESULTS

A. Response Quality and Respondent Profile

Of 240 residents approached across the three programme strata, 195 returned questionnaires. Fifteen cases were removed because of incomplete responses, invariant response patterns or failure to satisfy the residence criterion, producing 180 usable observations and a usable response rate of 75.0%. The final distribution preserved the intended programme diversity: 60 PR1MA residents, 72 RMMJ residents and 48 PPR residents.

Table V. Response And Sample Profile

Category	n	%
Questionnaires approached	240	100.0
Returned	195	81.3
Excluded after screening	15	6.3
Usable sample	180	75.0
PR1MA residents	60	33.3
RMMJ residents	72	40.0
PPR residents	48	26.7
Owner-occupiers	132	73.3
Tenants	48	26.7

Owner-occupiers represented 73.3% of the illustrative sample, while tenants represented 26.7%. This composition is analytically important because tenure and programme type may shape expectations, mobility options and willingness to invest in neighbour relations. The subsequent robustness models therefore retain tenure and scheme controls rather than assuming a homogeneous affordable-housing population.

B. Descriptive Statistics and Distribution

Table Vi. Descriptive Statistics

Construct	Mean	SD	Min	Max	Skewness	Kurtosis
HQ	3.648	0.591	1.833	5.000	-0.067	-0.041
NF	3.493	0.588	1.667	5.000	0.056	-0.076
AC	3.429	0.612	2.000	5.000	-0.007	-0.267
SC	3.569	0.639	2.167	5.000	-0.130	-0.604
CWB	3.706	0.620	2.000	5.000	-0.139	-0.351

Community well-being recorded the highest mean ($M = 3.706$, $SD = 0.620$), followed by housing quality ($M = 3.648$), social cohesion ($M = 3.569$), neighbourhood facilities ($M = 3.493$) and accessibility ($M = 3.429$). Accessibility was therefore the comparatively weakest aspect of the housing experience. Absolute skewness and

kurtosis values remained below 0.61, indicating no serious univariate distributional distortion. Although PLS-SEM does not require normal data, the distribution supports stable bootstrap inference and suggests that the estimates are not driven by severe floor or ceiling effects.

C. Measurement Model

Table Vii. Reliability And Convergent Validity

Construct	Loading range	Alpha	rho_A	CR	AVE	Decision
HQ	0.749-0.838	0.882	0.887	0.911	0.631	Retain
NF	0.683-0.834	0.865	0.870	0.899	0.599	Retain
AC	0.760-0.840	0.853	0.858	0.895	0.630	Retain
SC	0.776-0.843	0.899	0.902	0.923	0.666	Retain
CWB	0.769-0.843	0.896	0.900	0.921	0.659	Retain

The reflective measurement model satisfied internal-consistency and convergent-validity requirements. Indicator loadings ranged from 0.683 to 0.843; Cronbach's alpha ranged from 0.853 to 0.899; composite reliability ranged from 0.895 to 0.923; and average variance extracted ranged from 0.599 to 0.666. One neighbourhood-facilities indicator loaded at 0.683. It was retained because it represented access to education and childcare, its deletion did not materially improve reliability, and the construct-level AVE and composite reliability remained satisfactory. This decision preserves content validity instead of mechanically deleting a policy-relevant item.

Table Viii. Htmt Discriminant Validity Matrix

Construct	HQ	NF	AC	SC	CWB
HQ	—	0.281	0.299	0.454	0.569
NF	0.281	—	0.376	0.477	0.505
AC	0.299	0.376	—	0.431	0.446
SC	0.454	0.477	0.431	—	0.736
CWB	0.569	0.505	0.446	0.736	—

Discriminant validity was also established. HTMT values ranged from 0.281 to 0.736, remaining below the conservative 0.85 criterion. The highest value occurred between social cohesion and community well-being, which is theoretically expected because both describe collective lived experience, but the value was sufficiently below the threshold to support empirical distinctiveness. The constructs can therefore be interpreted as related but non-redundant components of the housing-well-being process.

D. Correlation and Collinearity Diagnostics

Table Ix. Latent-Variable Correlations

Construct	HQ	NF	AC	SC	CWB
Housing quality	1.000	0.246	0.259	0.405	0.505
Neighbourhood facilities	0.246	1.000	0.321	0.420	0.446

Accessibility	0.259	0.321	1.000	0.379	0.389
Social cohesion	0.405	0.420	0.379	1.000	0.660
Community well-being	0.505	0.446	0.389	0.660	1.000

All latent-variable correlations were positive and below 0.70. Community well-being correlated most strongly with social cohesion ($r = 0.660$), followed by housing quality ($r = 0.505$), neighbourhood facilities ($r = 0.446$) and accessibility ($r = 0.389$). Inner variance-inflation factors ranged from 1.107 to 1.457, well below conservative thresholds. The structural coefficients are therefore unlikely to be distorted by problematic collinearity, and the comparatively strong cohesion-well-being relationship does not represent construct duplication.

E. Structural Model and Hypothesis Testing

Table X. Direct Paths and Hypothesis Tests

H	Path	β	SE	t	p	95% CI	Decision
H1	HQ $\rightarrow$ CWB	0.257	0.062	4.160	<0.001	[0.135, 0.374]	Supported
H2	NF $\rightarrow$ CWB	0.162	0.063	2.574	0.009	[0.039, 0.284]	Supported
H3	AC $\rightarrow$ CWB	0.100	0.053	1.881	0.058	[-0.003, 0.203]	Not supported
H4	HQ $\rightarrow$ SC	0.280	0.063	4.473	<0.001	[0.155, 0.402]	Supported
H5	NF $\rightarrow$ SC	0.282	0.067	4.200	<0.001	[0.152, 0.410]	Supported
H6	AC $\rightarrow$ SC	0.216	0.063	3.427	0.002	[0.094, 0.340]	Supported
H7	SC $\rightarrow$ CWB	0.450	0.057	7.867	<0.001	[0.340, 0.564]	Supported

The model explained 31.4% of the variance in social cohesion and 53.8% of the variance in community well-being. Housing quality positively influenced well-being ($\beta = 0.257$, $p < 0.001$, $f^2 = 0.117$), supporting H1. Neighbourhood facilities also had a positive but smaller direct effect ($\beta = 0.162$, $p = 0.009$, $f^2 = 0.045$), supporting H2. Accessibility did not reach the 5% significance threshold after the other constructs and cohesion were controlled ($\beta = 0.100$, $p = 0.058$, $f^2 = 0.018$); H3 was not supported. Housing quality ($\beta = 0.280$), neighbourhood facilities ($\beta = 0.282$) and accessibility ($\beta = 0.216$) all positively predicted social cohesion, supporting H4-H6. Social cohesion exerted the strongest proximal effect on well-being ($\beta = 0.450$, $p < 0.001$, $f^2 = 0.300$), supporting H7.

Table Xi. Specific Indirect Effects

H	Indirect path	Indirect β	SE	p	95% CI	Direct β	Type	Decision
H8	HQ $\rightarrow$ SC $\rightarrow$ CWB	0.126	0.033	<0.001	[0.065, 0.196]	0.257***	Comp. partial	Supported
H9	NF $\rightarrow$ SC $\rightarrow$ CWB	0.127	0.034	<0.001	[0.065, 0.199]	0.162**	Comp. partial	Supported
H10	AC $\rightarrow$ SC $\rightarrow$ CWB	0.097	0.031	0.002	[0.041, 0.162]	0.100 ns	Indirect-only	Supported

Bootstrapped specific indirect effects supported all three mediation hypotheses. The housing-quality indirect effect was 0.126 (95% CI [0.065, 0.196]), while the neighbourhood-facilities indirect effect was 0.127 (95% CI [0.065, 0.199]). Because their corresponding direct effects remained positive and significant, both relationships displayed complementary partial mediation, supporting H8 and H9. Accessibility produced an indirect effect of 0.097 (95% CI [0.041, 0.162]) while its direct effect was non-significant. H10 was therefore supported as indirect-only mediation. The total effects were 0.383 for housing quality, 0.289 for facilities and 0.197 for accessibility, showing that a direct-path-only interpretation would materially understate the contribution of accessibility and the relational value of the other housing attributes.

Table Xii. Explanatory And Predictive Assessment

Endogenous construct	R ²	Adjusted R ²	Q ²	PLSpredict result	Interpretation
Social cohesion	0.314	0.302	0.283	PLS RMSE lower for 4/6 indicators	Moderate explanatory and predictive power
Community well-being	0.538	0.527	0.510	PLS RMSE lower for 5/6 indicators	Substantial explanatory and strong predictive power

Predictive assessment reinforced the explanatory results. Q² values were 0.283 for social cohesion and 0.510 for community well-being, indicating predictive relevance. Repeated ten-fold prediction yielded positive Q²_predict values; PLS prediction errors were below the linear-model benchmark for four of six social-cohesion indicators and five of six well-being indicators. The model therefore exhibits moderate predictive power for cohesion and comparatively strong predictive power for well-being. The illustrative SRMR of 0.061 provides an acceptable descriptive fit diagnostic, although prediction and out-of-sample error remain more informative than a single global fit threshold in PLS-SEM.

Table Xiii. Robustness And Sensitivity Analysis

Test	Result	Interpretive implication
Demographic and scheme controls	Signs and significance stable	Principal conclusions are not explained by basic composition differences
Complete-case analysis	Maximum $ \Delta\beta = 0.026$	Missing-data treatment does not alter the pattern
Alternative well-being score	Maximum $ \Delta\beta = 0.021$	Results are not dependent on a single well-being item
Full-collinearity VIF	1.34-2.42	No severe common-method collinearity indication
Programme multigroup analysis	No adjusted difference at $p < 0.05$	Avoid overclaiming PR1MA-RMMJ-PPR differences
Non-linearity / quadratic checks	All quadratic $p > 0.10$	Linear paths are adequate for this specification

F. Robustness and Sensitivity Analysis

The substantive pattern remained stable after introducing age, income, household size, tenure, years of residence and programme controls. Complete-case and alternative well-being specifications changed the principal coefficients by no more than 0.026. Full-collinearity VIFs ranged from 1.34 to 2.42, providing no indication of severe common-method inflation. Quadratic terms were non-significant, supporting a linear representation. Exploratory programme comparisons suggested a somewhat larger housing-quality effect among PPR residents, but no between-group difference survived permutation-adjusted significance testing; programme-specific claims should therefore remain cautious.

The illustrative evidence answers both objectives coherently. Objective 1 is addressed by the supported direct effects of housing quality and neighbourhood facilities, the non-significant conditional direct effect of accessibility, and the strong effect of social cohesion. Objective 2 is addressed by complementary mediation for housing quality and facilities and indirect-only mediation for accessibility. The result therefore not that accessibility is unimportant; rather, its contribution to well-being is primarily realised when access enables participation, interaction and supportive social relations.

DISCUSSION

The model shows that community well-being is neither a simple consequence of physical housing provision nor an exclusively social outcome. Housing quality and neighbourhood facilities retain direct effects, while all three housing attributes contribute indirectly through social cohesion. The findings therefore support a layered explanation in which material conditions provide resources and constraints, while cohesion determines how effectively residents convert those conditions into collective well-being.

Housing quality directly improves community well-being and also strengthens cohesion. The direct effect is consistent with evidence that ventilation, safety, space adequacy, service reliability and maintenance shape residential satisfaction and health. The indirect effect adds a more original interpretation: well-maintained common areas and responsive defect management may operate as visible signals that shared rules are respected and collective problems can be solved. Housing quality is consequently not merely a private dwelling attribute; in multi-unit estates it also influences confidence in neighbours, managers and shared institutions.

Neighbourhood facilities demonstrate both direct and mediated effects. The direct pathway indicates that access to shops, healthcare, education, recreation and security services reduces everyday burden. The equally important indirect pathway supports the idea of facilities as social infrastructure. Usable green spaces, community rooms, local shops and religious facilities create repeated low-intensity encounters through which recognition, trust and mutual support can emerge. This explains why facility quantity alone is an inadequate performance measure: provision generates social value only when facilities are safe, inclusive, maintained and practically usable.

Accessibility presents the most theoretically informative result. Its direct effect becomes non-significant after social cohesion is included, but its specific indirect effect remains significant. This does not imply that access is unimportant. Instead, it suggests that proximity and mobility improve well-being mainly by enabling residents to participate, sustain relationships and use shared services. Affordable units located far from transport or daily destinations may impose time and cost burdens that restrict community participation. Conversely, accessible estates can support social interaction even when accessibility does not independently raise subjective well-being after other conditions are controlled.

Social cohesion is the strongest proximal predictor of community well-being. This is consistent with Social Capital Theory, which expects trust, belonging, mutual aid and collective efficacy to expand the resources available to individuals. The coefficient is substantively larger than the conditional direct effects of the housing attributes, but it should not be interpreted as evidence that social programming can substitute for adequate housing. Cohesion is partly produced by the material and locational environment. Asking residents to build community in poorly maintained, unsafe or inaccessible estates would transfer institutional responsibility to households rather than resolve the underlying housing deficit.

The mediation pattern constitutes the principal theoretical contribution. Complementary mediation for housing quality and facilities indicates that these attributes enhance well-being through two simultaneous routes: immediate functional benefits and socially generated benefits. Indirect-only mediation for accessibility indicates a more relational mechanism. Together, the findings extend Social Capital Theory by treating the affordable-housing estate as an opportunity structure that can facilitate or constrain the formation of social capital. The theory is thereby connected to property management, neighbourhood design and transport accessibility rather than applied only to pre-existing networks.

The absence of a significant accessibility-to-well-being direct path also helps reconcile contradictory evidence. Accessibility may improve opportunity while simultaneously exposing households to congestion, travel stress

or higher local costs. Residents may use improved access to maintain networks outside the estate rather than deepen local attachment. Once cohesion is modelled, the remaining direct effect can therefore be small. This explanation should be tested using objective travel time, transport frequency and activity-space measures because perceptual accessibility may reflect both actual location and residents' current well-being.

The robustness results suggest that the central mechanism is not confined to one programme type, although the sample is too small for definitive scheme comparisons. A descriptively stronger housing-quality effect among PPR residents would be plausible because lower-income tenants often have fewer exit options and greater exposure to common-property maintenance. PR1MA and RMMJ residents may evaluate facilities and accessibility against different expectations and vehicle ownership patterns. Future programme-specific analysis should therefore test measurement invariance and secure adequate group sizes before drawing distributional conclusions.

A. Theoretical Implications

The study advances Social Capital Theory in three respects. First, it models the physical estate as an antecedent of relational resources rather than treating cohesion as an exogenous community trait. Secondly, it separates direct material effects from indirect relational effects, avoiding the false choice between design-based and community-based explanations. Thirdly, the differing mediation forms show that housing attributes do not operate through a uniform mechanism: quality and facilities have functional and social value, whereas accessibility is primarily converted into well-being through participation and connection in the illustrative model.

B. Practical and Industry Implications

Developers and property managers should move from facility inventories to performance-based post-occupancy management. Maintenance response time, cleanliness, lighting, safety, booking accessibility, inclusive use and recurring conflict should be monitored alongside conventional technical indicators. Community spaces require modest programming and transparent governance, but participation should remain voluntary. The results also support early resident onboarding, accessible complaint systems and small recurring activities that help residents recognise one another and develop confidence in collective problem-solving.

C. Policy Implications

Local authorities should evaluate affordable housing after occupation using a balanced scorecard that includes dwelling and common-property quality, facility usability, public-transport access, social cohesion and community well-being. Planning approval should consider safe walking routes and realistic service capacity, while handover and defect-liability processes should protect the social functioning of shared areas. The indirect-only accessibility result is particularly relevant: transport and land-use policy should be treated as community policy because mobility determines whether residents can participate in local institutions and maintain support networks.

Contributions

Table Xiv. Distinct Contributions Of The Study

Contribution	Specific advance
Theoretical	Extends Social Capital Theory by specifying housing quality, facilities and accessibility as opportunity structures whose well-being effects may be converted through cohesion.
Methodological	Integrates direct, mediating, predictive and robustness evidence in a programme-comparative PLS-SEM design.

Practical	Provides developers and property managers with an auditable set of post-occupancy priorities.
Policy	Supports people-centred affordable-housing evaluation beyond unit counts, price and minimum compliance.
Managerial	Links maintenance, facility access, communication and resident participation to community outcomes.
Societal	Recognises affordable-housing residents as community members whose dignity and quality of life depend on both material adequacy and relational support.

CONCLUSION

The housing quality and neighbourhood facilities directly improve community well-being, whereas accessibility exerts its influence primarily through social cohesion. All three housing attributes strengthen cohesion, and cohesion is the strongest proximal predictor of well-being. The model explains 31.4% of social cohesion and 53.8% of community well-being, with positive predictive relevance for both endogenous constructs.

The first objective is achieved by distinguishing the conditional direct effects of housing quality, facilities and accessibility. The second is achieved through bootstrapped specific indirect effects: social cohesion provides complementary partial mediation for housing quality and facilities and indirect-only mediation for accessibility. This pattern supports the theoretical proposition that affordable-housing attributes generate welfare not only through comfort and service access but also through the relational resources they enable.

The resulting recommendation is an integrated housing-performance approach. Developers should maintain dwellings and common property, ensure facilities are genuinely usable and support transparent estate governance. Local authorities should connect housing delivery with transport, service planning and post-occupancy community indicators. These conclusions are analytically coherent but remain illustrative; no empirical claim should be made until every statistic is replaced with verified respondent-level and SmartPLS output from the Johor Bahru survey.

Limitations

1. The cross-sectional design limits temporal and causal inference. Mediation estimates are consistent with the proposed mechanism but cannot establish that housing attributes preceded cohesion or that cohesion preceded well-being.
2. All principal constructs are resident perceptions collected in the same questionnaire, creating potential common-method and mood-related covariance despite procedural and statistical controls.
3. A sample of 180 is adequate for the main PLS model but restricts complex multigroup analysis and detection of small programme-specific effects.
4. Johor Bahru's metropolitan and institutional context may not represent rural affordable housing, other Malaysian states or rental systems outside PPR.
5. Objective accessibility, facility capacity, maintenance records and defect inspections are not incorporated directly into the structural model; their absence may produce perceptual measurement bias.
6. Residents who are frequently absent, dissatisfied or socially isolated may be harder to recruit, creating non-response bias that late-response comparisons cannot fully resolve.

Future Research

Future research should use longitudinal designs beginning before occupation and continuing through community formation. Repeated measures would clarify whether physical quality and facilities precede cohesion, whether cohesion decays when maintenance deteriorates, and how resident turnover changes collective capacity.

A multi-source design should link resident perceptions with defect records, maintenance response times, facility booking and usage data, public-transport service, network-based accessibility and local crime or safety indicators. Multilevel modelling could then separate household perceptions from estate-level performance.

Comparative research across Malaysian states and Southeast Asian cities should examine whether tenure, ethnic diversity, management institutions and welfare systems alter the mediation mechanism. Bonding, bridging and linking social capital should be separated to determine whether cohesion supports inclusion or reproduces closed networks.

Experimental and quasi-experimental evaluation is also needed. The phased opening of a community facility, pedestrian connection, resident programme or management intervention could provide stronger evidence of how specific changes affect interaction, trust and well-being. Finally, qualitative interviews should explore why formally adequate facilities remain unused and how residents interpret safety, belonging and mutual responsibility.

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