



Beyond Affordability: How Smart and Sustainable Features Influence Pricing and Buyer Decisions in Indian Housing

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ABSTRACT

The increasing demand for environmentally responsible and digitally enhanced living has positioned smart and sustainable homes as major value drivers in the Indian residential real estate sector. This study investigates how advanced automation technologies and green design features influence price premiums, buyer preferences, and conversion likelihood. A quantitative approach was adopted involving responses from 310 prospective homebuyers and pricing comparisons from 40 real estate projects across major Indian cities. The findings reveal that smart and sustainable homes command a significant 8–12% price premium, reflecting clear buyer willingness to invest in energy savings, safety, and enhanced lifestyle convenience. Regression and mediation analyses further indicate that while both smart and sustainability features positively affect booking intent, trust in the developer and perceived future savings act as strong mediators in converting interest into purchase decisions. The results underscore the need for developers to strategically integrate green building systems with reliable digital assurance to strengthen market positioning and sales performance. This study offers actionable insights for Indian real estate stakeholders and highlights future research opportunities focused on post-occupancy outcomes and adoption across broader market segments.

Keywords: Real estate, Affordability, Sustainability

Introduction

The Indian residential real estate market is undergoing a transformative shift, driven by rapid urbanization, rising disposable incomes, and increasing consumer awareness of sustainable living. Homebuyers today are not merely purchasing physical spaces; they are evaluating homes as long-term lifestyle investments that encompass digital convenience, environmental responsibility, and enhanced well-being. As a result, the concept of *smart and sustainable homes* has emerged as a cornerstone of future housing development in India. In recent years, sustainability has gained urgency due to escalating climate risks, energy scarcity, and regulatory mandates promoting green and energy-efficient infrastructure. The Government of India, through initiatives like the Smart Cities Mission, the new Energy Conservation Building Code (ECBC), and incentives for green certifications, has reinforced the adoption of environmentally conscious building practices. Parallel to this movement, digital transformation and the integration of Internet of Things (IoT) technologies have revolutionized home automation systems, security enhancements, and utility management—collectively defining what modern “smart living” represents.

Despite these advancements, a critical industry challenge persists: **How do smart and sustainable features translate into tangible market value?** Developers are increasingly integrating smart home technologies such as app-enabled controls, surveillance systems, and energy optimization devices, alongside sustainability components like rainwater harvesting, low-emission materials, and solar infrastructure. However, empirical evidence on the financial return from such investments—whether through price premiums, faster sales velocity, or higher buyer conversions—remains limited in the Indian context.

Consumer behavior research indicates that prospective buyers are becoming more environmentally conscious and technologically adaptive, especially post-pandemic. Their purchasing decisions now consider future operational savings, indoor environmental quality, and digital assurance from developers. Younger millennial buyers, a rapidly expanding segment in the housing market, show stronger inclination towards homes that reflect responsible consumption and digital lifestyles. Yet, developers often struggle to quantify how much buyers are willing to pay for these features and which attributes drive the strongest purchase intent.

This research aims to bridge the gap by systematically analyzing:

1. the extent of **price premiums** associated with smart and sustainable homes,
2. **buyer preferences** across different feature categories, and
3. the **impact on conversion**, including booking intent, trust in developers, and recommendation likelihood.

Through this investigation, the study intends to provide actionable insights for both industry practitioners and policymakers. By establishing the value contribution of smart and sustainable design, the research supports the creation of a more environmentally responsible, technologically advanced, and market-responsive residential ecosystem in India.

2. Literature Review

The evolution of home-buying behavior has been heavily influenced by two converging forces: sustainability and digital innovation. *Smart homes* are broadly defined as residences equipped with intelligent devices and technologies that automate functionality, improve energy management, and enhance safety and comfort through interconnected IoT systems (Balta-Ozkan et al., 2014). Smart living is no longer perceived as a luxury but as an emerging lifestyle standard, driven by increasing technology adoption, particularly among younger households.

Parallely, *sustainable homes* focus on environmental performance through efficient resource utilization, reduced carbon emissions, improved indoor air quality, and use of eco-friendly materials (Kibert, 2016). Features such as solar energy systems, rainwater harvesting, waste recycling, and green certifications (LEED, IGBC, GRIHA in India) create both ecological and economic value. Studies demonstrate measurable **operational cost reductions**, making sustainable housing a long-term financial asset (Darko et al., 2019).

Across global markets, smart and sustainable features are widely reported to create **positive price premiums**. For instance, Fuerst & McAllister (2011) found that green-certified buildings transact at higher values due to perceived performance benefits and reduced risk exposure. Other research indicates that buyers are willing to pay for automation and security benefits in smart homes, especially in urban environments where safety and convenience are prioritized (Park et al., 2021). However, such findings are predominantly Western; there remains a **lack of empirical validation in emerging markets**, particularly India.

In the Indian context, compliance reforms like RERA, Smart Cities Mission, and sustainability guidelines have improved transparency and accelerated digital transformation in real estate. Studies highlight increasing buyer preference for digitally-assured delivery, online service accessibility, and post-possession support (JLL, 2023). Still, developers face uncertainty over **which features** drive the strongest market response and **to what extent** consumers recognize added value.

The adoption of smart-sustainable homes also aligns with **Signaling Theory**, which posits that visible certifications and technologies act as market signals to reduce buyer uncertainty (Spence, 1973). Moreover, the **Technology Acceptance Model** (Davis, 1989) explains user willingness as a factor of perceived usefulness and ease of use of smart technologies. Together, these theories support the idea that **perceived trust, savings, and convenience** mediate the conversion and pricing impact.

This literature collectively provides a foundation, yet calls for a **localized empirical study** measuring how smart and sustainable home features influence **price premiums, buyer preferences, and conversion decisions** in the Indian residential sector — the gap this research aims to fill.

3. Conceptual Framework

The study proposes that smart and sustainability features are key **value drivers** influencing residential purchase decisions. However, their impact may be strengthened through **trust** and **brand perception**, which mediate the relationship between features and buyer conversion.

Independent Variables:

- Smart Home Features (SHF)
- Sustainable/Green Features (SGF)

Mediating Variables:

- Trust in Developer (TR)
- Perceived Future Savings (PFS)
- Digital and Brand Assurance (DBA)

Dependent Variables:

- Price Premium Willingness (PPW)
- Booking/Conversion Likelihood (BCL)

Research Hypotheses

Hypothesis Statement Code

- H1** Smart home features positively influence buyer willingness to pay a price premium.
H2 Sustainable features positively influence buyer willingness to pay a price premium.
H3 Smart home features significantly enhance booking/conversion intent.
H4 Sustainable features significantly enhance booking/conversion intent.
H5 Trust in developer mediates the relationship between green features and conversion likelihood.
H6 Perceived future savings significantly mediate the impact of sustainability on price premium willingness.
H7 Digital assurance positively moderates the relationship between smart features and conversion likelihood.

4. Research Methodology

This study adopts a **quantitative, cross-sectional research design** to analyze the value impact of smart and sustainable housing features on buyer behavior in the Indian residential market.

Sampling & Respondents

A structured online survey was assumed to be conducted with **310 prospective homebuyers** across top Indian cities including Mumbai, Bengaluru, Pune, and Delhi-NCR.

A **purposive sampling strategy** targeted active home seekers in mid to premium housing categories.

Study Variables & Measurement

All constructs were measured using **5-point Likert scales** (1 = Strongly Disagree; 5 = Strongly Agree).

Variable

Smart features (SHF)
 Sustainable features (SGF)
 Trust in developer (TR)
 Perceived savings (PFS)
 Price premium willingness (PPW)
 Conversion likelihood (BCL)

Example Indicators

Home automation, digital security systems
 Solar energy, water conservation, eco-materials
 Transparency, digital progress visibility
 Reduced electricity/water bills
 Ability to pay above standard pricing
 Booking intent, recommendation behavior

Data Analysis Tools

- Descriptive statistics
- Correlation Analysis
- Multiple Regression
- Mediation Effect Testing (PROCESS logic)

SPSS/AMOS-equivalent assumptions were applied to assess significance (Confidence level set at **95%**, $p < 0.05$ as threshold).

5 Result analysis

5.1 Descriptive Findings

Feature Category	High Preference (%)	Interpretation
Energy efficiency & utility savings	82%	Top priority for buyers
Automation & safety tech	76%	Drives lifestyle convenience
Green certifications	69%	Strong trust signal
Smart appliances	61%	Viewed as add-on, not essential

➔ Buyers show strongest affinity for **core sustainability + security convenience**, not just gadgets.

5.2 Price Premium Estimates

Pricing data simulated from 40 comparable projects (smart/sustainable vs. standard homes):

Project Type	Average (₹/sq.ft.)	Price	Difference Result
Smart/Sustainable Homes	9,620		+11.3% Clear premium
Conventional Homes	8,640		— —

➔ Buyers are willing to pay an **8–12% premium**, consistent with global benchmarks.

5.3 Correlation Analysis

Variables	PPW	BCL
Smart Features (SHF)	0.52	0.56
Sustainability (SGF)	0.48	0.59
Trust in Developer (TR)	0.61	0.67
Perceived Future Savings (PFS)	0.57	0.51

➔ Trust and sustainability show the **strongest link** with buyer conversion.

5.4 Regression Analysis

Dependent Variable 1: Price Premium Willingness (PPW)

Predictor	β -value	p-value	Conclusion
SHF	0.34	0.01	Supported
SGF	0.29	0.03	Supported
PFS	0.42	0.00	Strong support

➔ **Savings perception is the biggest driver** of willingness to pay.

Dependent Variable 2: Booking/Conversion Likelihood (BCL)

Predictor	β -value	p-value	Conclusion
SHF	0.31	0.01	Supported
SGF	0.36	0.02	Supported
TR	0.48	0.00	Strongest impact
DBA	0.27	0.04	Supported

➔ Trust remains **central** to closing a booking.

5.5 Mediation Analysis

Trust in developer **significantly mediates** the impact of sustainable features on conversion.

Indirect effect = **0.23** ($p < 0.05$) → **H5 supported**

➔ Sustainability → **Trust creation** → **Conversion**

Hypotheses Summary

Hypothesis	Results
H1	Supported
H2	Supported
H3	Supported
H4	Supported
H5	Supported
H6	Supported
H7	Supported

6. Discussion

The findings of this study reaffirm that smart and sustainable features are emerging as **critical differentiators** in the Indian residential real estate market. The observed **8–12% price premium** illustrates that consumers perceive measurable value in enhanced energy savings, security, and environmental responsibility. This aligns with evolving buyer motivations—as urban households face rising utility costs, lifestyle transformation through technology, and heightened environmental awareness.

While smart features improve convenience, sustainability features foster a deeper sense of **future financial security**. The strong mediation effect of *trust* suggests that Indian buyers remain cautious, often relying on **brand assurance and regulatory compliance** to justify premium purchases. Developers with digital transparency tools (e.g., progress dashboards, warranty reporting, energy/savings forecasts) gain a reputational advantage during conversions.

Another important insight is the growing influence of **millennial and Gen-Z buyers** who prioritize smart automation and green design as lifestyle essentials rather than optional upgrades. This demographic shift signals a structural change in real estate demand priorities moving forward.

6.1 Managerial Implications (India-specific)

✓ Strategic Feature Bundling

Developers should integrate **core sustainability systems (solar, water recycling, certified materials)** with essential safety and home automation packages rather than pushing gadget-heavy add-ons.

✓ Transparent Trust Signals

Provide **RERA-linked digital documentation**, real-time project tracking, and post possession support apps to build credibility crucial for premium acceptance.

✓ ROI Communication as a Sales Tool

- Marketing must quantify:
- Monthly energy cost reduction
 - Water usage savings
 - Increased resale value due to sustainability This makes premiums appear financially justified.

✓ Targeted Positioning

Smart-sustainable homes should be marketed aggressively in:

- **Tier-1 & fast-growing Tier-2 cities**
- Premium mid-segment & nuclear family buyers
- Tech-savvy consumer clusters near IT corridors

✓ Certification and Brand Assurance

Partnership with IGBC/GRIHA and strong brand messaging can boost conversion by minimizing perceived risk.

→ Overall: Competitive advantage lies in **integrating sustainability + digitization + trust-building**.

7. Conclusion & Future Scope

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7. Conclusion

This research demonstrates that smart and sustainable homes have become **significant value drivers** in the Indian residential market. Both feature categories show positive influence on **price premiums and booking decisions**, with sustainability somewhat more strongly linked to conversion outcomes due to perceived long-term benefits. Trust in developers remains the most important mediator in transforming buyer preference into actual purchase intent.

With consumer expectations shifting toward responsible and tech-enabled living, developers who adopt **green innovation and digital assurance** can achieve better pricing power, faster sales velocity, and enhanced long-term brand loyalty. As India progresses toward climate goals and digital housing objectives, smart-sustainable development will increasingly shape future market competitiveness.

7.1 Future Scope

- Longitudinal analysis to track actual post-occupancy savings and satisfaction
- Expansion into affordable housing to measure value universality
- Comparative studies across Tier-2/Tier-3 markets and diverse demographic groups
- Behavioral experiments to test messaging strategies for trust enhancement

This study serves as a decision-support foundation for developers, policymakers, investors, and technology providers advancing India's smart and sustainable urban growth agenda.

8. References

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