CHAPTER 29

Case Analysis of Price Movements and Absorption Rates in Real Estate

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ABSTRACT

The purpose of this study to examine the price movements and absorption rates in real estate markets of Hyderabad and Bangalore, two key technology hubs in India. The research gathers quarterly property price data from Tier 1 cities like Hyderabad and Bangalore micro - markets over the period. By using statistical Analysis to examine price differences among flat typologies between Hyderabad and Bangalore. The findings reveal that significant differences in pricing and absorption rates exist between property types and cities. Factors like IT development and infrastructure projects have substantial impacts on market performance. This study provides an in-depth analysis of real estate price movements and absorption rates in mid-range properties in Hyderabad and Bangalore, addressing gaps in current literature regarding localized demand and market dynamics. The analysis is limited to mid-range flats and does not cover other property types. Developers can use absorption rate trends to decide on property types to build and provides insights for investment decisions.

Keywords: Indian Real estate market; Price movements in real estate; Absorption rate in real estate; Housing market trends in Tier 1 cities; Real estate market segmentation.

1.0 Introduction

Real estate is one of the most well-known and desired industries in the world. The four subsectors of Real Estate are – housing, commercial, retail and hospitality. Urbanization and infrastructure development continue to be growth drivers for Real Estate. The prolonged mobilization of citizens to urban centers has fueled calls for housing and commercial properties. Smart city and transit-oriented development projects are restructuring cityscapes, with green infrastructure planning taking center stage. Absorption rate is not the same throughout India it varies depending on several reasons. The absorption rates required in establishing whether the real estate market is seller friendly or buyer friendly. High absorption rate reflects a seller's market, with high demand and low inventory fueling competition. Conversely, a low absorption rate indicates a buyer's market, where there are surplus supply grants consumers greater bargaining power.

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Also, it helps to determine how quickly properties are being sold in some areas or industries, providing helpful information on market activity. The absorption rate directly influences property prices. High absorption rates often lead to price increases, as demand outpaces supply. Conversely, low absorption rates suggest a surplus of homes, which can lead to price adjustments. By monitoring such trends, stakeholders can make informed decisions and better interpret price movements.

To investors and contractors, absorption rate is a valuable tool to understand where, when, and what to invest in. It also helps determine the most appropriate time to invest and the form properties to target, such as luxury, middle-range, or low-cost housing, depending on market demand. The present research is centred on Hyderabad and Bangalore as main research locations for examining price movements and absorption levels in the Indian real estate market. These cities are perfect research subjects due to their position as premier technology hubs that top significant economic development in South India.

Bangalore has been referred to as India's Silicon Valley, has witnessed radical population changes with its population of migrants increasing 300% during 2001-2021. The boom is because the city is the leader in information technology and its successful startup economy, which has spurred raised both house values and overall cost of living. Hyderabad, on the other hand, is currently a major challenger, especially as Telangana became a standalone state in 2014. The city has seen a 40% increase in IT professionals moving in there, attracted by its enhanced infrastructure, more affordable housing options, and government policies that favour business development. Bangalore still retains very serious traffic issues and expensive property; Hyderabad has an affordable option with rent levels averaging 35-40% lower.

2.0 Literature Review

Studies on housing markets highlight the complex interactions between psychological factors, economic fundamentals, and market conditions that drive price movements and absorption rates. Shiller (2007) illustrated how market sentiment can affect price variations independently of economic fundamentals, while Genesove & Mayer (2001) discovered that sellers who are averse to losses tend to set higher asking prices. DiPasquale and Wheaton (1994) noted that markets with inelastic supply absorb new units more rapidly, whereas Saiz (2010) found that cities with geographic limitations experience absorption rates that are 30-45% higher. Quigley & Raphael (2005) determined that cities with stringent regulations have absorption levels up to 40% greater, and Ellen *et al.* (2018) reported significant variations at the neighbourhood level based on local amenities and access to transportation.

The COVID-19 pandemic accelerated pre-existing trends in the housing market rather than creating entirely new dynamics, as observed by Delventhal *et al.* (2022). Their study identified a significant shift in housing demand as remote workers left costly urban centers, leading to unprecedented demand in suburban and secondary markets. Ramani & Bloom (2021)

corroborated this trend, noting increased absorption rates in smaller cities due to pandemic-driven migration from metropolitan areas. Liu & Su (2021) highlighted a notable reassessment of location characteristics, with changing priorities affecting absorption across different submarkets. Delventhal & Parkhomenko (2020) anticipated that these pandemic-induced trends would have a lasting impact, permanently altering spatial demand patterns and the connection between home and workplace locations.

3.0 Research Methodology

3.1 Determining a null and alternative hypothesis
The typology comparison between Bangalore and Hyderabad:
- *Null Hypothesis (H$_0$):* There is no significant difference in absorption rates for 2BHK units between Bangalore and Hyderabad.
- *Alternative Hypothesis (H$_1$):* There is a significant difference in absorption rates for 2BHK units between Bangalore and Hyderabad.

3.2 Determine the appropriate statistical test
A two-tailed paired t-test was selected for this analysis. The t-test is used to determine whether there is a significant difference between the means of two groups, especially with small sample sizes.
The formula for the paired t-test is:

$$t = \frac{\overline{x} - \mu}{s/\sqrt{n}}$$

Where:
- $\overline{x}$ is the mean difference between paired observations
- s is the standard deviation of the differences
- n is the number of pairs
- $\sqrt{n}$ is the square root of the sample size

This paired t-test was appropriate because the analysis involved comparing related data points cross different housing configurations and cities, with potentially small sample sizes.

3.3 Set the value of alpha, the type I error rate
The conventional significance level of $\alpha = 0.05$ (5%) has been employed, i.e., we have a 5% probability of rejecting a true null hypothesis. We have also employed this 5% significance level as the cut-off point for identifying statistical significance in our work.

3.4 Establish the decision rule
If the p-value is less than 0.05, reject the null hypothesis and conclude there is a statistically significant difference between the groups.

3.5 Gather sample data

The data set consists of 57 points from 2008 to 2022, which gives 56 degrees of freedom (n-1) for statistical analysis. The data set allows for a detailed analysis of the residential real estate market in two leading Tier-1 cities of India, Bangalore and Hyderabad, with a focus on the inventory of unsold houses, the segmentation by BHK configurations, and supply trends over a few quarters. The most significant component of the dataset is the segmentation of unsold housing inventory by the number of bedrooms, i.e., 1BHK, 2BHK, 3BHK, and 4BHK apartments. The dataset offers complete quarterly information on unsold stock, both units and the corresponding area in million square feet, thus facilitating the proper comparison of absorption by housing type and city location. The period between 2008 and 2022 was selected based on its incorporation of the crucial stages associated with real estate expansion, infrastructure expansion, policy reforms, and economic shocks that significantly influenced the housing markets of Bangalore and Hyderabad. This period covers:

- Mega-infrastructure projects like Hyderabad's Outer Ring Road, Metro Rail, and T-Hub, and Bangalore's Namma Metro, IT corridor development, and Peripheral Ring Road.
- Seasonal variations in housing demand across quarters, including:
  - Q1 (Jan-Mar): Lower sales due to financial year closure
  - Q2 (April-June): Higher capital expenditures because of tax incentive advantages and yearly salary increases.
  - Q3 (July-September): Strong property sales during festive seasons like Diwali and Dussehra
  - Q4 (Oct-Dec): Builders' end-of-year sales and promotional discounts

Demand patterns have been greatly influenced by the COVID-19 pandemic, as evident from a discernible trend towards larger homes in suburban locations. This big data is especially valuable for research papers on urban residential development, real estate investment patterns, cross-regional market comparisons, and the impact of economic cycles and infrastructure projects on residential property absorption rates.

3.6 Analyse the data

The paired t-tests were conducted, yielding p-values for different comparisons:
- 1BHK vs 2BHK: $p = 0.0324$
- 2BHK vs 3BHK: $p = 0.0084$
- 3BHK vs 4BHK: $p = 0.0000097$
- 2BHK in Bangalore vs 2BHK in Hyderabad: $p = 0.9186$

3.7 Reach a statistical conclusion

- For comparisons within Hyderabad (1BHK vs 2BHK, 2BHK vs 3BHK, and 3BHK vs 4BHK), all p-values are below 0.05, so we reject the null hypothesis. This indicates statistically significant differences in absorption rates between these housing configurations.

- For 2BHK comparison between Bangalore and Hyderabad, $p = 0.9186 > 0.05$, so we fail to reject the null hypothesis. This indicates no statistically significant difference in 2BHK absorption rates between the two cities.

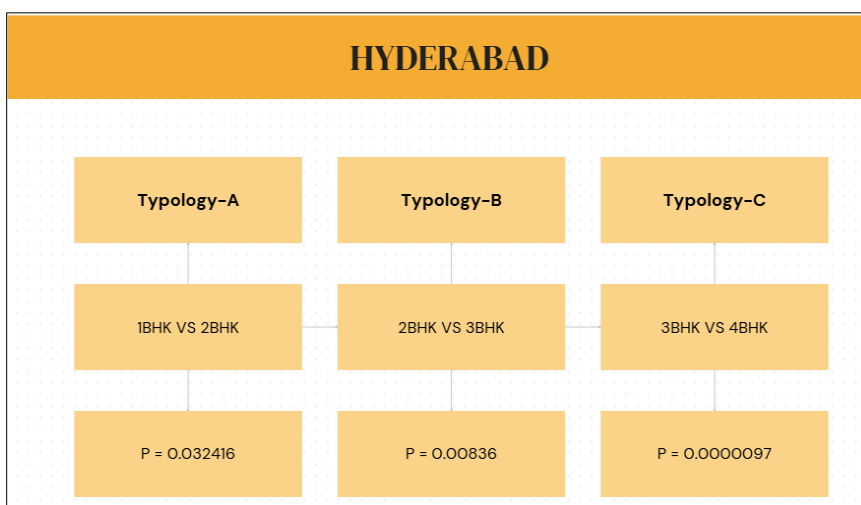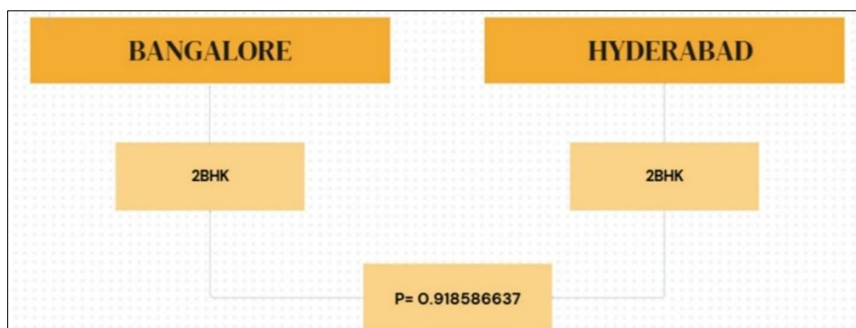**Figure 1: Statistical Comparison of Housing Typologies in Hyderabad**

Figure 2: Statistical Comparison of 2BHK Housing between Bangalore and Hyderabad

3.8 Make a business decision

Based on the statistical conclusions:

- Developers in Hyderabad should recognize that buyer preferences vary significantly across different unit configurations (1BHK, 2BHK, 3BHK, 4BHK).

- The significant differences in absorption rates suggest that certain configurations are more in demand than others in Hyderabad.
- For 2BHK units, developers can use similar marketing and pricing strategies in both Bangalore and Hyderabad, as the absorption rates are not significantly different between the two cities.
- Investment decisions should consider these configuration-specific trends rather than treating all unit types as having equal market performance.

Table 1: Hypothesis Testing Results: Significant Absorption Rate Variations across Residential Unit categories in Hyderabad

Typology Comparison	Null Hypothesis (H_O)	Alternative Hypothesis (H_a)	P-Value
1BHK vs 2BHK	There is no significant difference in absorption rates. between 1BHK and 2BHK units.	There is a significant difference in absorption rates between 1BHK and 2BHK units.	0.0324
2BHK vs 3BHK	There is no significant difference in absorption rates between 2BHK and 3BHK units.	There is a significant difference in absorption rates Between 2BHK and 3BHK units.	0.0084
3BHK vs 4BHK	There is no significant difference in absorption rates between 3BHK and 4BHK units.	There is a significant difference in absorption rates between 3BHK and 4BHK units.	0.0000097

Table 2: Hypothesis Testing Results: Absorption Rate Variations across 2BHK Apartments in Bangalore vs. Hyderabad

Typology Comparison	Null Hypothesis (H_0)	Alternative Hypothesis (H_1)	p-value
2BHK Apartments: Bangalore vs. - Hyderabad	There is no significant difference in absorption rates for 2BHK apartments between Bangalore and Hyderabad	There is a significant difference in absorption rates for 2BHK apartments between Bangalore and Hyderabad	0.9186

4.0 Conclusion

The results from the two-tailed t-tests show key differences in housing demand across BHK categories in Hyderabad. Mid-sized units like 2BHK and 3BHK have higher absorption rates, while larger units (4BHK and above) have lower demand. This information helps real estate developers, investors, and policymakers make smart decisions about housing supply, pricing, and future projects. Meanwhile, another t-test comparing 2BHK absorption rates in

Bangalore and Hyderabad shows no significant difference, with a high p-value (0.9186). This means demand for 2BHK apartments is stable in both cities, making them a safe investment. Developers can focus on pricing, location, and affordability, knowing that 2BHK units remain popular regardless of regional differences.

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