

PROPTECH: RESHAPING THE LANDSCAPE OF INDIAN REAL ESTATE

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Abstract

The Indian real estate industry is one of the most significant sectors contributing to the country's economy. It encompasses residential, commercial, retail, and hospitality segments, among others. Here are some key points about the Indian real estate industry. The objectives of the real estate industry can vary depending on various factors such as market conditions, economic trends, government regulations, and the specific goals of individual companies. However, some common objectives of the real estate industry. After India gained independence in 1947, the real estate sector underwent significant changes and experienced several trends that shaped the industry. Public housing projects: In the 1950s and 1960s, the government launched several public housing projects to provide affordable housing to low-income families. Real estate has been an important part of Indian society for centuries, with a rich and diverse history. The evolution of the real estate industry in India can be traced back to the ancient times when land was considered as one of the most valuable assets, and was owned by the ruling class and wealthy landowners. During the Mughal period, the construction of grand palaces, forts, and mausoleums, such as the Taj Mahal, led to a thriving construction industry. The British colonial period saw the development of urban centers such as Mumbai, Kolkata, and Chennai, with the construction of railway networks, ports, and administrative buildings.

INTRODUCTION

Construction of residential colonies for government employees: The government also constructed residential colonies for its employees in major cities. These colonies were equipped with basic amenities such as schools, hospitals, and parks. Land reforms: The government introduced land reforms in the 1950s and 1960s aimed at redistributing land to the landless, tenant farmers, and rural laborers. These reforms had a significant impact on the rural real estate sector and led to the emergence of new players in the industry.

Urban planning and infrastructure development: The government invested heavily in urban planning and infrastructure development, such as the construction of roads, bridges, and ports, to improve connectivity and support economic growth. This led to the development of new urban centers and increased demand for real estate in these areas. India has experienced rapid urbanization in recent decades, with more people moving to cities for employment opportunities. This has driven demand for housing and commercial real estate in urban areas.

Emergence of private players: In the 1980s and 1990s, private players entered the real estate sector, leading to a shift from public housing to private housing. The emergence of private developers led to the development of new real estate segments, such as luxury housing and

commercial real estate. **Liberalization of the economy:** The liberalization of the Indian economy in the 1990s led to an influx of foreign investment and expertise into the real estate sector. This led to the development of large-scale real estate projects, such as IT parks, shopping malls, and entertainment complexes. **Rise of affordable housing:** The Indian government has launched several initiatives to promote affordable housing, such as the Pradhan Mantri Awas Yojana (PMAY), which provides subsidies to low-income families to buy or build their own homes. This has increased the availability of affordable housing and boosted demand in this segment.

Digitization of the industry: The real estate industry in India has seen significant digitization in recent years, with the advent of online real estate portals and property listing platforms. It has now become relatively easier for buyers, sellers, and renters to find and transact for properties online and land up getting better deals.

Introduction of Real Estate Regulatory Authority (RERA): The Real Estate (Regulation and Development) Act, 2016, introduced a regulatory framework for the real estate sector in India, aimed at protecting the interests of buyers and promoting transparency in the industry. RERA has increased accountability and transparency in the real estate sector. **The COVID-19 effect:** The pandemic had drastic effects on the real estate industry in India, with a slowdown in construction activity as well as demand for properties. However, the industry is expected to bounce back as the economy recovers. Overall, the real estate industry in India is undergoing a period of significant change and evolution, with new players, technologies, and regulatory frameworks transforming the industry. Today, the Indian real estate industry is one of the fastest-growing in the world, with a wide range of players, from small-scale developers to large corporations, and the industry continues to evolve with the introduction of new technologies and regulatory frameworks.

- ❖ **Market Size and Growth:** The Indian real estate market has witnessed substantial growth over the years, driven by factors such as rapid urbanization, population growth, rising income levels, and government initiatives. The market comprises various segments, including residential, commercial, retail, and hospitality.
- ❖ **Regulatory Framework:** The real estate sector in India is subject to various laws and regulations at both the central and state levels. The Real Estate (Regulation and Development) Act, 2016 (RERA) is a significant regulatory framework aimed at promoting transparency, accountability, and efficiency in the sector.
- ❖ **Key Players:** The industry consists of numerous players, including developers, investors, builders, brokers, and financial institutions. Some prominent developers in India include DLF, Godrej Properties, Tata Housing, and Sobha Developers, among others.
- ❖ **Residential Segment:** The residential real estate segment dominates the market, driven by the increasing demand for housing due to urbanization and population growth. Affordable housing has emerged as a key focus area, supported by government schemes such as Pradhan Mantri Awas Yojana (PMAY).
- ❖ **Commercial Segment:** The commercial real estate sector is driven by demand from the IT/ITES industry, corporate offices, retail, and hospitality sectors. Major cities like

Mumbai, Delhi NCR, Bangalore, and Pune are witnessing significant investments in commercial properties.

- ❖ **Challenges and Opportunities:** The real estate industry in India faces challenges such as regulatory hurdles, land acquisition issues, funding constraints, and market volatility. However, it also presents opportunities for developers and investors, especially in emerging sectors like warehousing, co-working spaces, and affordable housing.
- ❖ **Technology Adoption:** The industry is increasingly embracing technology-driven solutions such as digital platforms for property transactions, virtual reality for virtual property tours, and Building Information Modeling (BIM) for efficient project management and design.
- ❖ **Sustainability and Green Building Practices:** With growing environmental concerns, there's a rising emphasis on sustainability and green building practices in the real estate sector. Developers are incorporating energy-efficient designs, renewable energy sources, and eco-friendly materials into their projects.

Impact of Proptech in India:

- International investments in India have increased due to the implementation of online platforms.
- Understanding market trends and finding data with help of heat maps has made the work of realtors much easier and faster
- Reit's have now become the new asset class, which allows any individual to have investments in real-estate at a low price.
- Developers are saving on marketing cost due to presence of proptech firms which present the perfect property to an eligible buyer.
- Proptech has evolved phenomenally and this has curated enough data.

Reshaping the landscape of Indian real estate involves navigating several key trends and factors that are transforming the sector:

1. **Technology Integration:** Adoption of PropTech (Property Technology) solutions such as virtual reality for property tours, AI-driven analytics for market predictions, and blockchain for transparent transactions.
2. **Shift in Consumer Preferences:** Demand for sustainable and eco-friendly housing options, integrated townships offering amenities, and smart homes equipped with IoT devices.
3. **Government Initiatives:** Policies like RERA (Real Estate Regulation and Development Act) for transparency, PMAY (Pradhan Mantri Awas Yojana) for affordable housing, and Smart City Mission fostering urban development.

4. **Rise of Co-living and Co-working Spaces:** Increasing urbanization and millennial preferences are driving demand for flexible living and working spaces, influencing commercial and residential real estate.
5. **Investment Opportunities:** Growth of Real Estate Investment Trusts (REITs) providing avenues for retail investors, foreign direct investment (FDI) reforms boosting capital inflows, and emergence of alternative asset classes like student housing and warehousing.
6. **Challenges and Opportunities:** Addressing liquidity crunches, managing regulatory compliance, adapting to changing market dynamics post-pandemic, and leveraging digital platforms for marketing and sales.
7. **Regional Dynamics:** Varied growth rates across cities and regions, with Tier 2 and Tier 3 cities becoming attractive due to affordability and infrastructure development.
8. **Environmental Sustainability:** Increasing focus on green building certifications, energy-efficient designs, and sustainable construction practices to meet global standards and reduce environmental impact.

REVIEW OF LITERATURE

- ❖ **Ravi Kanbur & Renana Jhabvala (2002):** noticed that SEWA has 13,000 members in the construction sector, most of them in Ahmedabad City. These women are mainly ‘unskilled’ construction workers, working as casual labor. A study conducted by SEWA Academy in 1999, found the following: Women were engaged in mainly unskilled work. 92% carrying loads of cement, bricks, concrete etc. The rest in semiskilled work like plastering or concrete mixing. In comparison, 36.8% of men were engaged load carrying, the rest being in semi-skilled or skilled work, like masonry, tile laying, centering etc
- ❖ **Khan (2020)** noticed that the Construction sector and construction activities are considered to be one of the major sources of economic growth, development and economic activities. It can be regarded as a mechanism of generating the employment and offering job opportunities to millions of unskilled, semi-skilled and skilled work force. It also plays key role in generating income in both formal and informal sector. It supplements the foreign exchange earnings derived from trade in construction material and engineering services.
- ❖ **Acharya (2021):** Unfortunately, construction sector is one of the most neglected sectors in Pakistan. Although the construction sector has only a 2.3 percent share in GDP, its share of the employed labor force was disproportionately large at 6.1 percent in 2007. The construction sector is estimated to have grown by 17.2 percent in 2006-07 as against 5.7 percent of last year. The higher demand for construction workers is also reflected in a continued double-digit rise in their wages since FY05. Their wages increased by 11.1 percent in 2007.
- ❖ **Mallick & Mahalik (2019):** empirically examining the importance of construction sector in propelling economic growth rate in India, the study has found that in the presence of the

dominant influence of capital stock, the impact of the construction sector gets blurred or neutralized.

- ❖ **Prasad Rao (2019):** Once capital stock is dropped from the model, the construction sector emerges as a significant determinant of economic growth, while other financial variables such as interest rate and non-food bank credit including the financial liberalization dummy do not play significant roles in economic growth. However, from an investigation of the impact of the construction sector on economic growth through the channel of employment, it is seen that the construction sector might be impacting the growth rate through increasing employment and thereby increasing the aggregate output in the economy.
- ❖ **Sushmitha (2020):** In this background the questions that arise are: What is the trend of construction industry in India during post-reform period as compared with pre-reform period? What is the nature of growth of employment in this sector? Is the growth of output and employment of the construction sector.

Objectives of the Study:

- ❖ To understand the perception of real estate buyers regarding PropTech
- ❖ To understand the perception of real estate sellers regarding PropTech

METHODOLOGY

Research Design: This research design encompasses both exploratory and descriptive elements, allowing the researcher to investigate and uncover new insights while also providing a comprehensive understanding of users of PropTech.

Population:

This research mainly focuses on the population of buyers and sellers of real estate industry in India.

Sampling Techniques:

The sample size has been chosen using Cochran's formula

Sampling Method:

A convenience sampling method while ensuring that the sample's distribution closely approximates normality,

Scaling Techniques:

This research adopted both open and close-ended questions, including Likert scale techniques, to gather a comprehensive range of responses and insights from participants

Data Collection:

A combination of primary data, collected through surveys and interviews from buyers and sellers of real estate industry in India.

Data Analysis & Interpretation:

The questionnaire survey performed through online platforms yielded 72 responses from various stakeholders of the Indian real estate industry. The questionnaire survey had 27 responses from seller and 49 from buyers as shown in the Figure 5.1 and Table 5.1 as given below. The questionnaire survey serves the purpose of finding whether both the sellers and buyers of real estate are aware of property technology. Hence to verify the same data from the responses collected it is noted that majority of the respondents i.e. 57 out of 72 have denied that they are aware of the term „PropTech“ as shown in the table 2.

Table 1: Descriptive Statistics

	Observed N	Expected N	Residual
Buyer	45	36.0	9.0
Seller	27	36.0	-9.0
Total	72		

Table 2: Descriptive Statistics of awareness of PropTech

	Observed N	Expected N	Residual
Yes, I'm aware of the term PropTech	15	36.0	-21.0
No, I'm not aware of the term PropTech	57	36.0	21.0
Total	72		

Interpretation:

Based on the inferences made from figure 2 and 3 it is evident that majority of the respondents understand PropTech just as an interface for buying, selling and renting platform and therefore a complete understanding of the proptech is missing. Hence the full potential of proptech is unknown to many of the respondents of both the buyer as well as the seller questionnaire.

ANOVA Test

The data with respect to the age group and the perception of the respondents in relation to proptech was validated using the one sample ANOVA test. The descriptive statistics of the input data are given in Table 4 which represent 5 categories of age group and the sellers perspective on usage of online platforms for selling properties. Null Hypothesis: The means of all the groups are equal. (“All the age groups have the same perception about using online platforms”) Alternate Hypothesis: The means of all the groups are not equal. (“All the age groups have different perception about using online platforms”)

Table 3: ANOVA Test Result

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.635	4	.159	.271	.894
Within Groups	13.472	23	.586		
Total	14.107	27			

The results of the test are as shown below in the Table 3 which depicts a significance value highly greater than 0.05 i.e. 0.894 and so we accept null hypothesis, which means that there is

no significant difference of perception among different age groups of the respondents.

Table 4: Descriptive Statistics

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
25-34yrs	2	3.0000	.00000	.00000	3.0000	3.0000	3.00	3.00
35-44yrs	12	3.2500	.96531	.27866	2.6367	3.8633	2.00	5.00
44-54yrs	1	3.0000	3.00	3.00
55-64yrs	9	3.4444	.52705	.17568	3.0393	3.8496	3.00	4.00
65+	4	3.5000	.57735	.28868	2.5813	4.4187	3.00	4.00
Total	28	3.3214	.72283	.13660	3.0411	3.6017	2.00	5.00

Interpretation:

Figure 6 shows that majority of the respondents of seller questionnaire have a positive experience (Good- 48.1%, Very Good- 14.8%, Excellent – 25.9%) while using online platforms for selling properties. It also shows 48.1% respondents agree that use of online platforms makes their work easier and faster. `

ANOVA Test

The data with respect to the age group and the perception of the respondents in relation to proptech was validated using the one sample ANOVA test. The descriptive statistics of the input data are given in Table 6 which represent 4 categories of age group and the seller’s perspective on usage of online platforms for selling properties.

- **Null Hypothesis:** The means of all the groups are equal. (“All the age groups have the same perception about using online platforms”)
- **Alternate Hypothesis:** The means of all the groups are not equal. (“All the age groups have different perception about using online platforms”)

ANOVA Test

The data with respect to the age group and the perception of the respondents in relation to proptech was validated using the one sample ANOVA test. The descriptive statistics of the input data are given in Table 6 which represent 4 categories of age group and the seller’s perspective on usage of online platforms for selling properties.

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- **Alternate Hypothesis:** The means of all the groups are not equal. (“All the age groups have different perception about using online platforms”)

Buyers Perception

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.124	3	.041	.040	.989
Within Groups	41.421	40	1.036		
Total	41.545	43			

Descriptive statistics of Buyer Questionnaire Perception

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
25-34yrs	29	3.3103	1.00369	.18638	2.9286	3.6921	1.00	5.00
35-44yrs	4	3.2500	.50000	.25000	2.4544	4.0456	3.00	4.00
45-54	4	3.2500	.95743	.47871	1.7265	4.7735	2.00	4.00
55-64	7	3.4286	1.27242	.48093	2.2518	4.6054	1.00	5.00
Total	44	3.3182	.98294	.14818	3.0193	3.6170	1.00	5.00

Interpretation:

The test results validate that the significance value is greater than 0.05 i.e. 0.989 and so we accept null hypothesis, which states that all the age groups have the same perception about using online platforms for buying properties as shown in table 5. Adding to the above discussion, majority of the buyers are found to have a positive outlook towards online platforms for buying or referring for market trends in real estate and have rated 5(Excellent)-14.3%, 4 (V.Good)-28.6% and 3(Good)-40.8% and when given a real- life situation the respondent showed greater preference (59.2%+28%) as seen in figure 13 to referring online listings to get information regarding the properties for buying decision.

CONCLUSION

The Indian Real Estate market is growing at an exponential rate, study finds the need of 100 million houses in the next few years and hereby showing that there is a supply issue in the Indian Real estate sector as stated by various firms. Our study finds that though there is a lot of development but the real estate sector needs the right product for the right market segment at the right price which the current developers are unable to cater.

A demand for affordable housing is found to be greater than ever before. It is evident from the study that Proptech has increased the sales of new homes constructed by various developers across India in the tier 1 cities, it has also been seen as a proportion of these transactions are foreign investments without actual site visits all with the help Prop technology.

The Customer survey suggests that individuals are not aware of the term proptech but they tend to use online platforms for various purposes such as property listing, online stats, market trends etc. in India. According to our study following are the hindrances to growth of proptech in Indian market:

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