

THINK PIECE



Smart Homes in India - A Luxury No More

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HOME AT YOUR FINGERTIPS

Over the years, advances in technology have transformed not only businesses but entire industries. The commercial distribution of electric power in the 1900s, for example, helped industries to scale up production. Similarly, the use of computer and internet since the 1990s has revolutionised business processes and the way we access and analyse data. Businesses across sectors have actively adopted technology that has, in turn, transformed the way these sectors operate, by providing increased operational efficacy, new revenue streams, and creating new products and services and giving a wider consumer reach. Technology has positively disrupted several sectors, telecommunications, including banking, transport, healthcare, education, real estate, and manufacturing.

Having said that, however, the use of technology is not limited to businesses and industries. With time, the application of technology has widened and trickled down to our daily lives — it has entered our domestic spaces and irretrievably altered the way we live, work, entertain, and interact. For instance, residential buildings use technology in the form of centralised security, heating, ventilation, and air conditioning (HVAC), lighting, and several other systems, thereby increasing the efficiency of the building and the ease of its tenants. Not only residential buildings, but devices such as phones, personal computers, washing machines, microwaves, refrigerators, television sets and other gadgets that have become an essential part of our homes, now come with better technology, thus simplifying household chores and bringing convenience, ease, and speed to day-to-day tasks.

Since the second half of the twentieth century, the combination of wireless technology and extended use of internet technology has allowed everyday devices to become connected and perform an organised task, thereby introducing the early concept of what is known as 'smart home'. The widespread use of broadband internet post the dotcom boom in the early 2000s and fast-paced innovations have further paved way for integrating modern technologies such as artificial intelligence (AI), cloud computing, machine learning and motion sensors in devices, including the ones used at homes, to make them 'smart'.



Then there is internet of things (IoT) technology, which is a vast network of connected devices, that enables automation by giving the user an ability to programme such devices for performing complex tasks together and creating sophisticated systems that can be controlled remotely through smartphones and other internet-connected devices.

The International Telecommunications Union estimated that nearly 4 billion people were using the internet by 2019. It is also predicted that the number of connected devices used worldwide will surpass 41.6 billion by 2025.¹ As technology is becoming all-pervasive, smart products and services are becoming an integral part of homes, with consumers across countries looking for holistic and wide-ranged solutions to micromanage their daily lives with the help of 'smart home' benefits. A home integrated with an ecosystem of smart devices connected to each other via internet of things (IoT), and which can be programmed to perform tasks together and can be controlled through remote access, hand gestures, and voice commands by the users is termed a 'smart home'.

Connected inside: How smart homes work





Modern technology making headway in homes since 2000s



1960

Electronic computing home operator (ECHO) IV device to compute shopping lists, control the home's temperature, and turn appliances on and off

1980

Launch of X10 protocol-enabled communication amongst devices through wired connections

1984

'Smart Homes' term coined by the National Association of Home Builders, USA

1990

Dotcom boom

1998

Conceptualisation of Zigbee wireless home automation protocol

2000

Technologies such as, broadband internet, IoT, and cloud computing integrated with home devices

2013 onward

Launch of smart speakers with AI assistants like Echo by Amazon, and Google Nest by Google, and hubs like Samsung SmartThings



1.1 TECHNOLOGY CONNECTING REAL ESTATE AND LIFESTYLE

Smart homes come with several benefits, some of which include enhanced security, simplified day-to-day tasks, augmented entertainment experience, energy savings, as well as the user comfort of having remote access and information about the connected devices — instantly and from anywhere. For instance, the use of smart security devices enables the owner of the home to have virtual access through security cameras from anywhere.

Smart homes also aid the elderly and differently-abled persons in performing several day-to-day tasks with ease and efficiency, such as access to phone calls via voice calls, auto reminders for medication, prevention of accidents, and early access to information for caretakers.

The induction of smart home technology also enables users to monitor and control energy usage with integrated motion sensors and remote control of home devices. In fact, the American Council for an Energy-Efficient Economy (ACEEE) has estimated that households in the US have been able to reduce energy consumption up to 17 percent after adoption of smart home technologies.

Smart homes integrated with technologies such as IoT, AI, motion sensors, etc., not only expanded the practical utility of a home, but also allowed the users to upgrade their lifestyles. For instance, one can pre-program the lights, entertainment systems, and air conditioning system to create an ambient environment before the user reaches home. A smart fridge can keep a tab on food items you need to refill and order groceries online, thus allowing you to perform repetitive tasks with minimum time spent. Toilets are outfitted with sensors to activate flushing system using hand gestures.

Simultaneously, smart bathrooms can allow one to customise showering system in terms of light, music, and water temperature to enrich the experience. The change in the notion of convenience and leisure in domestic spaces brought in by tech-enabled homes has increased the demand for smart home products and services over the years.

Real estate stakeholders have long realised this change; developers have been experimenting with integrating smart home technology as part of offerings to appeal to the consumers and generate higher revenues. Technology is also becoming a factor in determining the property's value along with those such as location, neighbourhood, market, age of the property and other amenities.

exhaust fan, soap dispenser

Smart alternatives to home devices





Smart home technologies - A value add

REMOTE ACCESS

Remote access of all home devices at your fingertips

ENERGY SAVINGS

Enables users to monitor and control energy usage

SAFETY AND SECURITY

Smart locks and alarms for immediate alerts and theft prevention

AUGMENTED ENTERTAINMENT EXPERIENCE

Voice control and programming of other devices such as dimming of lights while using entertainment systems

ELDERLY CARE

Access to phone calls via voice calls, auto reminders for medication, prevention of accidents

SIMPLIFIED HOUSEHOLD CHORES

Reminders for shopping list, smart cooking devices, automated cleaning





1.2 TECH-ENABLED HOMES RESHAPING THE GLOBAL PARADIGM

Many modern technologies such as AI, IoT, virtual reality, 3D printing, and big data have made inroads in the real estate sectors in macro-level processes such as construction, sales and marketing and property management, making them more efficient, transparent, and seamless. For instance, 3D printers are being used to construct houses within a shorter period of time and with minimum labour. On the other hand, virtual reality is being used for marketing property while giving homebuyers a near-reality experience remotely.

The ubiquitous use of connected devices by end-users has seen technology application at the micro-level, i.e., in both commercial and residential spaces. The commercial spaces, for example, are fitted with lighting controls and temperature controls to create a pleasant and ambient environment for users and also save energy. In case of residential spaces, real estate developers have been integrating technology at building and township levels with amenities such as centralised security and HVAC, intelligent resource and waste management, smart street lighting, and many more.

The exponential rise in consumer demand for smart devices and home automation has seen developers venture into the smart home category as well. Globally, the market for smart home products and services is expected to generate nearly USD 99.5 billion by end of 2021, and is projected to grow at a compound annual growth rate (CAGR) of 15.3 percent between 2021 and 2025.²

According to International Development Corporation (IDC). countries such as the US. followed bv China and Canada, had the highest share in shipments of smart home devices such as smart speakers, video entertainment, security systems and others, as compared to other countries, in 2020. Correspondingly, as China is taking giant strides towards 5G technology, the country's estimated CAGR for shipment of smart home devices from 2019 to 2023 is highest in the world, at 22.6 percent.³ The wellbuilt internet infrastructure and faster speed are conducive to the wide-ranged adoption of smart home technology, which is now becoming a standard part of these countries' real estate offerings.

In India, although smart homes have been around for the past few decades, they are yet to become a part of mainstream real estate markets owing to a lack of consumer awareness and robust digital infrastructure, limited understanding of the concept and smart homes being considered a luxury more than an amenity.









INDIAN SMART HOMES – A LATENT MARKET

Developers in the Indian real estate sector have been providing amenities at project or township level such as club houses, recreational areas, and parking facilities to add value to their products and promote sales. Along with project-level amenities, individual apartments have built-in amenities such as marble/ Italian flooring, modular kitchens, and security systems.

The use of technology first became prominent in security systems with some developers providing facilities such as intercom and later video intercom systems in individual homes. With consumer awareness growing, the focus widened from project/ township level and broader in-home amenities, to providing convenience and comfort through smart homes, by starting with features such as video intercom services, smart lighting, and so on.

Over the years, depending on the type of features included in the project, smart homes have been, by and large, marketed as a luxury offering with a premium attached to them. Developers have targeted clientele with high spending propensity. This move has acted as a deterrent; since smart homes have been perceived as a luxury and not a necessity by the cost-conscious Indian homebuyers and the concept has failed to pick up as a selling point in the mainstream housing market. Moreover, smart home technology integration has been considered cumbersome due to multiple vendors, wiring hassles, frequent electric power cuts, and unclear use case.

Also, unlike the western and eastern counterparts such as the US, the UK, and China, the digital infrastructure and internet connection crucial for the functioning of such homes is still evolving in India. Moreover, smart homes also have associated risks such as data privacy and cyber security threats, which require appropriate regulations that are not in place currently.

However, in recent years, initiatives such as Digital India (2015) and Smart Cities Mission (2015) have taken up the cause for strengthening digital infrastructure. Along with this, factors such as an increased number of smartphones and internet users, better lifestyles, and shifting employment patterns from secondary sector to service sector, have seen smart home products and



services slowly gaining ground among Indian consumers, especially those residing in metro cities. Also, today's tech-savvy Indian homeowners and homebuyers, who are upwardly mobile and eminently qualified for securing credit, are seeing homes not just as a place to reside but also as a way to upgrade lifestyles.

While devices such as televisions, refrigerators, washing machines, and microwaves have already made their way into Indian homes as basic requirements, smart alternatives for such everyday devices have gained attention, too. In case of the television market, for example, the share of smart TVs jumped from 15 percent in 2018, to 50 percent in 2020.⁴

Also, the combined effect of modern technologies and the shift from wired to wireless has made the integration of smart devices and home automation less complicated. Moreover, fast-paced innovation and rising consumer demand have seen the cost of technology plummeting, making it more accessible to households of different income groups. Affordable alternatives to smart home devices, such as smart streaming sticks and smart plugs have surfaced in recent years with advancements in sensing technologies, which enable automation and remote control of 'non-smart' devices.

Further, the launch of smart speakers with built-in AI assistant such as Echo by Amazon, and Google Nest by Google in India post-2017, has brought home automation into sharper focus. According to International Development Corporation, more than 7 million units of smart speakers embedded with AI assistant were shipped to India in 2018.

With decreasing costs, growing number of options, and easy integration, smart home technology is becoming accessible to a broader population with Indian consumers warming up to the idea of the concept becoming a standard part of their homes. The revenue from the smart homes market is expected to grow at 20.3 percent CAGR in between 2021 and 2025 — highest compared to countries such as China, Germany, Japan, the UK, and the US.⁵

Changing lifestyle and digital transformation driving consumer interest in smart homes





The expanding market for smart homes has also seen real estate stakeholders including developers, interior design services and local startups jumping the bandwagon in recent years. Such startups offering consumers and developers smart home products and services have clocked nearly USD 10 million of investments since 2015⁶. Interior design services are offering smart interior design with automation solutions.

Developers are also looking to partner with manufacturers who can provide value-added systems. For instance, prominent developers have tied-up with Amazon and Google to offer homes preinstalled with respective companies' AI assistants. The current COVID-19 pandemic situation has further compelled developers to rethink their strategies and incorporate altered norms of social distancing and health considerations in their

projects. These norms can be supported through smart homes that use a single point of contact, in most cases smartphones, thus substituting for common touchpoints such as switches, doorknobs, water faucets, etc.

In India, nearly 1.2 million homes were sold in between 2017 to 2020, in major cities such as Ahmedabad, Bengaluru, Chennai, Delhi NCR, Hyderabad, Kolkata, Mumbai and Pune⁷. With nearly 416 million urban dwellers to be added by 2050, the demand for homes is only expected to increase. Factors such as the rising demand for residential spaces, necessitated use of technology during the pandemic, and the ever-increasing penetration of digital technology are set to play a significant role in adopting smart homes among stakeholders, making it a valuable part of mainstream residential real estate market in the future.

Evolving demand for tech-enabled homes in India

Projected revenue for sales of smart home devices and related services that enable home automation



3	Projected revenue in 2021 (USD billion)	CAGR in % (2021 – 2025)
World	99.5	15.3
United States of America	28.8	12.8
United Kingdom	6.7	15.1
Germany	6.1	11.8
India	4.3	20.3
China	18.1	16.7
Japan	5.4	18.0
Australia	2.5	11.6
Source: Statista, Housing Research		

⁶Venture Intelligence, Housing Research

⁷DataLabs, Housing Research





While previously limited to being a luxury, smart homes are gaining interest of Indian consumers with conveniences such as security, energy savings, and remote access of home devices amongst others, supported bv factors such as rising disposable income, ease of integration and plummeting costs of smart home technology. This interest is further fuelled by the current COVID-19 pandemic, since such homes support the new norms of social distancing and hygiene. The shifts brought in by the pandemic has fast-tracked the digital adoption among the consumers. Similarly, it has also pushed developers to strategise and execute innovative ways to meet these newer modern prerequisites.

Although internet connectivity and digital infrastructure, which is crucial for smart homes' functioning, are still evolving in the country, the impetus to digital transformation and growing internet user base is set to reach the billion mark by 2025⁸, and will enable masses to adopt smart home technology. Also, with the

rising number urban dwellers, resulting of the residential demand will further propel the shift towards smart homes. Moreover, the population of people in the age range of 60 and above is set to increase by 326 percent, and 80 and above by 700 percent by 2050.9 The National Policy on Senior Citizens (2011) recommends houses that are age-friendly, barrier-free, secure, and suited to the needs of the elderly, all of which can be addressed using smart home technology.

Having said that, however, it is too soon to determine the pace of the adoption of smart homes amongst Indian developers, homeowners, and homebuyers. But with several benefits congruent to the home dwellers current and future needs, the number of consumers opting for smart homes in India is poised to grow, making it a valuable part of real estate offerings.





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