A Study on the Impact of Infrastructure Elements on Aspiring Home Buyers in the National Capital Region

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Abstract

While the most decisive factor for purchasing residential real estate has largely been location, location, and location, there are other factors such as price, amenities, and the developer repute, that also prove to be decisive for a potential home buyer in making the final choice. However, in the current scenario, elements such as water, energy, transportation, and other variables have assumed considerable significance for the prospective clients seeking to purchase a place to dwell in. This present scenario is largely attributed to the fact that certain premium townships across India, which were once most sought after in the initial stages of launch, post handover, the end users had multiple grievances pertaining to their surrounding support systems such as road, electricity, health care, and so forth. This set of interrelated support systems that makes life easier and contributes to the functioning of the society and its activities is termed as infrastructure. The simplified definition of infrastructure is that it is a framework under which various systems and their components operate and deliver service to the end users. Human beings, over a period of time, have created support frameworks in order to sustain themselves in and around their dwellings. From establishing living spaces in and around sources of food and water, in the present times, accessibility and proximity to places of work have taken precedence. Thus, an assessment of the findings of the study throws light on why infrastructure is slowly becoming a high-priority factor in influencing the home buyer's mindset.

Keywords : **community, developer, fuel, government, infrastructure, livability, power, public - private partnership, society, sustainability, water**

Paper Submission Date : February 10, 2014 ; Paper sent back for Revision : April 12, 2014 ; Paper Acceptance Date : May 6, 2014

In the earlier times, when land was in abundant supply, individual housing had always been a regular feature of a dwelling space. During the time of the Industrial Revolution in Europe and immigration to the Americas and Australia, group housing on the lines of barracks became a de facto standard for civilian living spaces (Edwards, 2003). A living space alone does not support life, but also needs additional support systems that go along in making it worth living. The collective term used for these support systems is called 'infrastructure' (Grigg, 2010) (Figure 1). From railroads to airports to shipping ports, physical structures have been in place. However, in the present times, technology has made a major difference to how infrastructure is defined. This includes not just the fuel and energy supply lines along side irrigation, but also networks and human systems that facilitate business as well as communication. Our living spaces are surrounded by these tangible and intangible systems (Figure 2).

Literature Review

McKinsey & Company (2009) made an assessment of inefficiencies that impede growth in residential buying owing to the insufficient infrastructure available to the upcoming townships. There are clearly major bottlenecks which pertain to lack of communication between the developer community and the infrastructure building

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Figure 1. The Traditional Approach to Infrastructure

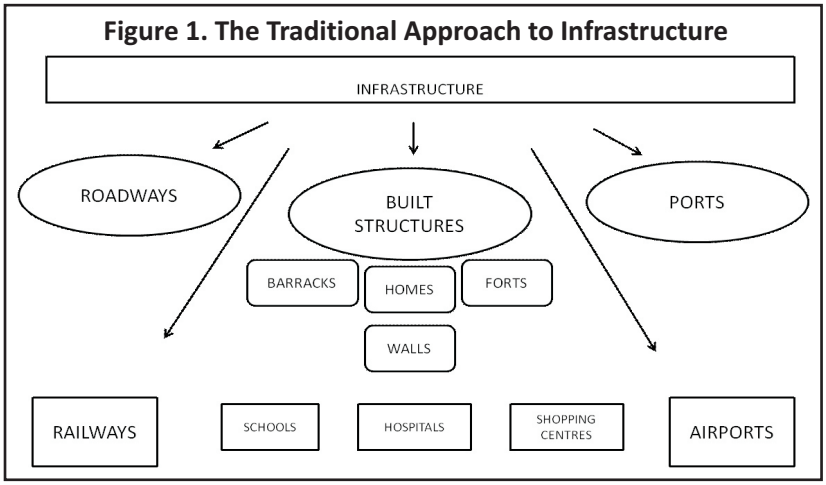
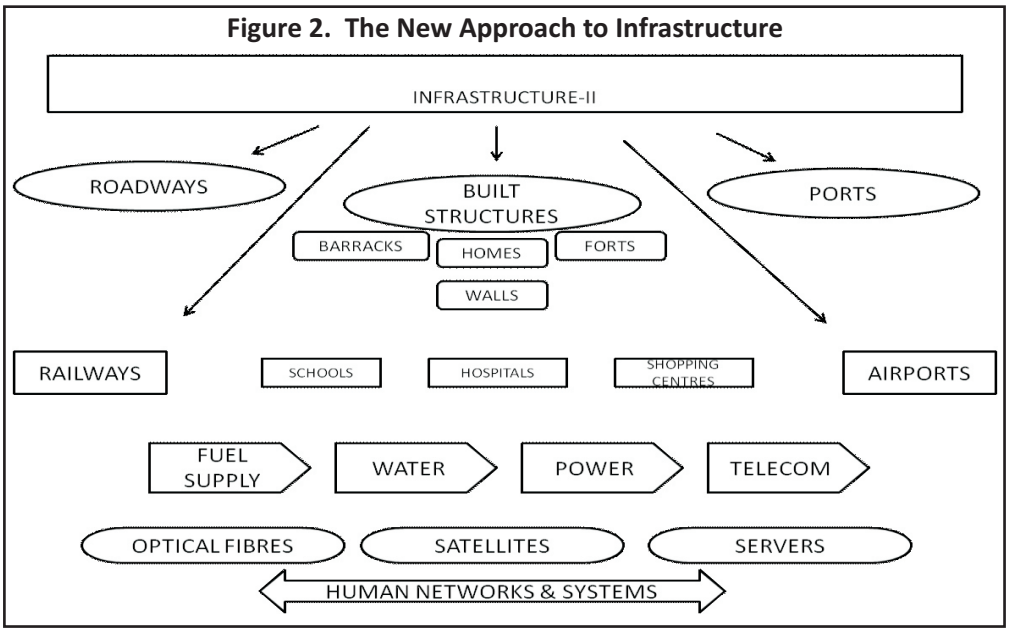


Figure 2. The New Approach to Infrastructure



government agencies, which needs immediate attention. A suggested course of action to establish a synchronicity between both public and private sector enterprises was thus highlighted. Grant Thornton (2013) examined the role of infrastructure and its ability to prove a shot in the arm of the Indian realty sector taking a hit in the absence of creating townships with requisite degree of infrastructure support in place. With the new Union Budget in place, the need of the hour was to establish a framework, wherein developer participation in the creation of infrastructure was encouraged, which could have been propelled by incentives based on taxation.

Kockelman, Siethoff, Walton, and Mahamassani (2001) analyzed the impact of enhanced transportation infrastructure on the overall growth in demand for housing in Austin City in the state of Texas, U.S.A. Post their empirical analysis, it was found that road and transportation connectivity had a positive impact on the psyche of the home buyer and had a registered improvement in the overall realty market sentiment. Also, some of the findings indicated that congestion in the existing dwelling areas was a deterrent when a Texan scouted for places to live in, not so much impacted by the CBDs (central business districts) as in the case of a lot many other cities.

Kanoria and Agarwal (2012) concluded that the only possible way for India to achieve a double-digit GDP growth target of 10% in the face of the global downturn is to focus on the infrastructure sector for which it had set aside a target of US$ 1 trillion in the Twelfth Five-Year Plan. Despite multiple PPP (public- private partnership) initiatives and infrastructure funds, while some projects such as the Delhi Metro and IGI T3 emerged as examples

of phenomenal success with their significant impact on realty markets of Delhi NCR, a whole lot of projects in other parts of the country, which ran into bureaucratic hurdles and opposition from masses within the population, have had repercussions for the foreign investment climate in the country. Critical sectors such as energy and transportation need immediate clearance due to the huge backlog, which is also having its impact in terms of rising costs of construction as well as deterring the buyers in the housing sector. Gonzales-Navarro and Quintana-Domeque (2010) analyzed the impact of introducing a very small infrastructure improvement by creating a structure such as a pavement leading to increased demand as well as pricing of the properties in and around the region. Having conducted this experiment in Mexico, it was found that private investment in a given area is an outcome of the wealth effect.

Haider and Miller (2000) used an innovative technique called spatial auto regressive (SAR) model to arrive at a relationship that upgrading of the transport systems in the urban environment of the Greater Toronto area had on realty pricing. With the usage of geo-spatial data through GIS, it had become evident that besides shopping and recreational space and availability of personal automotive transport, public transport assumed great significance such as light-rail transit (LRT). While connectivity to central business districts (CBD) assumed high significance, the Toronto Real Estate Board (TREB) finally woke up to the reality of infrastructure factors having a greater impact on the realty prices.

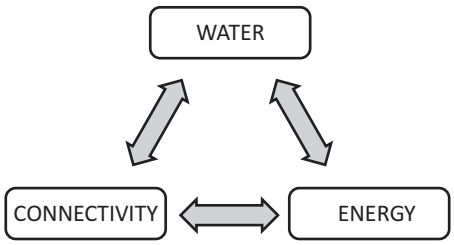
Jakhanwal (2012), with inputs from multiple researchers, highlighted the need to ensure that cities have ample infrastructure support for disaster preparedness and subsequent disaster management in case of a natural or human-induced calamity. While limitation of resources may hamper optimal allocation of resources to all dwelling pockets, the catastrophes with high probability of occurrence, at the least, need to be prepared for in advance. Furthermore, the involvement of the civil society in aiding enforcement agencies, as well as bodies such as civil defense, need to be encouraged in the wake of newer threats such as terrorist activities and rising crime against women, children, and the elderly.

Grant Thornton (2012) analyzed the transition of the real estate sector in India from an unorganized and fragmented industry to a new phase of a well-organized system (in the near future) that is likely to be married to the infrastructure sector, by and large. With the opening of the cap on foreign direct investment (FDI), and the serious thought given to the upcoming Real Estate (Regulation and Development) Bill and Land Acquisition, Rehabilitation and Resettlement Bill by the policy makers, a positive impact on the eventual home buyer as well as on the farmer/ land owner is expected. Not only the Central, but initiatives by the State governments to boost spending on real estate seems to be the first step in the right direction, with stress on public-private partnerships bringing about development, which the urban dwellers had been looking forward to for quite some time.

The Underlying Objectives

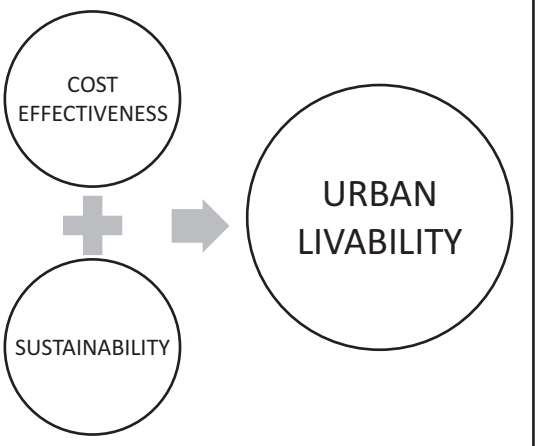
The primary objective of carrying out this exercise in research was to establish a relationship between aspiring home buyers in the National Capital Region (NCR) and the significance of infrastructure with respect to their living spaces. While basic needs are met in terms of food, clothing, and shelter, there is more to shelter than just a

Figure 3. The Essential Infrastructure Elements



roof over the head. This roof must be supported by water, energy, transportation, and more recently, communication networks, collectively termed as connectivity (Figure 3). The secondary objective, by far, is to understand how the cities and townships of the future could introduce the desirable characteristics through innovation in technology as well as urban planning, thus making livability cost-effective and sustainable (Figure 4) . Some of these innovative approaches may be capital intensive initially, but in the long run, they add many times the value to the investment made in implementing them in and around the living spaces.

Figure 4. Components of Urban Livability



Methodology

Random sampling was done and multiple respondents from all walks of life were interviewed . The respondent groups comprised of various professionals, including lawyers, architects, civil engineers, public relationship experts, brand managers & marketers, sales professionals, and IT and HR professionals working in the National Capital Region. The respondents could afford a house or already owned a dwelling space in the NCR.

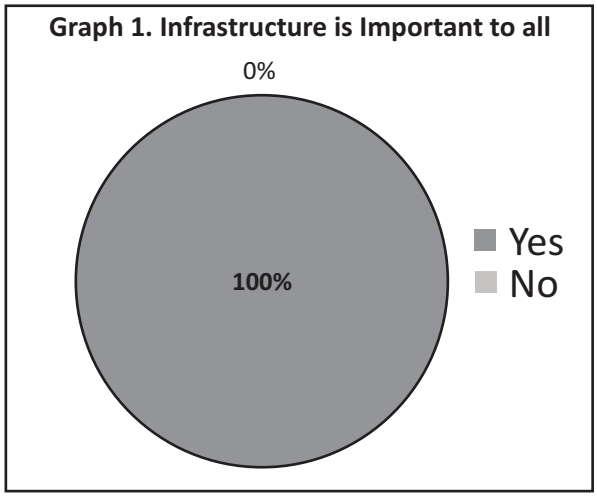
The respondents broadly resided in Delhi, Faridabad, Ghaziabad, Gurgaon, and Noida, and also happened to work in different parts of NCR. Their existing living spaces varied from individual bungalows to independent floors to apartments. A total of 30 respondents were interviewed directly, making the sample size of 30 respondents.

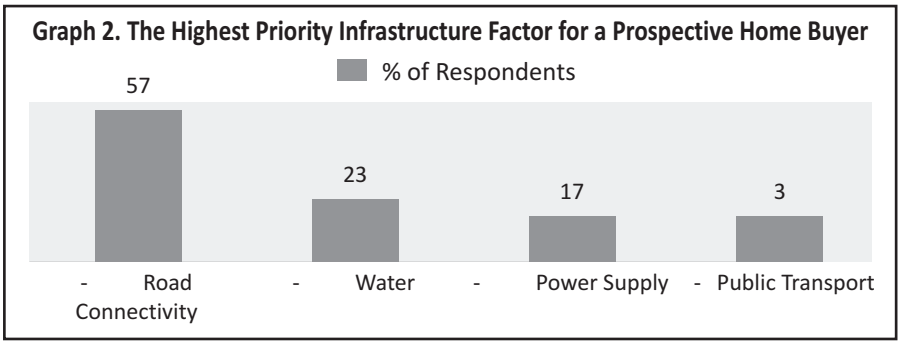
A total number of 50 participants were approached for the study, out of which, 30 respondents agreed to participate in this study, thus making the total response rate as 60%. The data were captured by conducting one to one interviews using Microsoft Access 2007 as a front end, and subsequent analysis was done using Microsoft Excel 2007. August- September 2013 was the period during which the study was carried out in Delhi and NCR region. Six respondents each were represented by Delhi, Noida, Gurgaon, Ghaziabad, and Faridabad.

Analysis and Results

As expected, most prospective buyers were quite concerned about the infrastructure in and around their desirable living space (Graph 1). It is highly unlikely for anyone to make a home purchase without considering the nuances of the facilities being made available to them. Furthermore, road connectivity by far was the top priority for majority of the home buyers (respondents), which implies that most of the home buyers were likely to have their own personal means of transport. Public transport, though important, was not the highest priority for them, but water and electricity remained a significant variable as far as the buyer's decision was concerned.

Despite new infrastructure development, such as the Delhi Metro in the NCR, the significance of road connectivity cannot be undermined (Graph 2). Most of the respondents owned a personal conveyance, which ranged from a bicycle to a four-wheeler, and felt that it was important for their township to be connected to a road



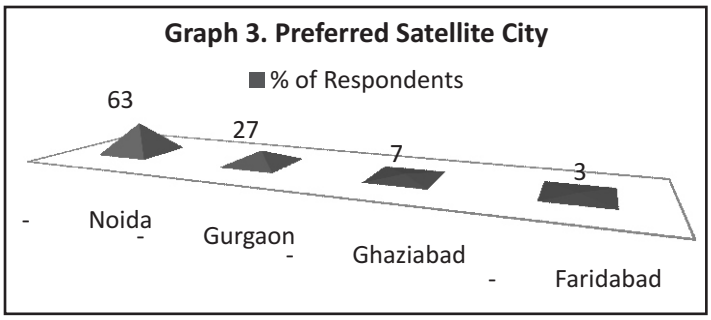


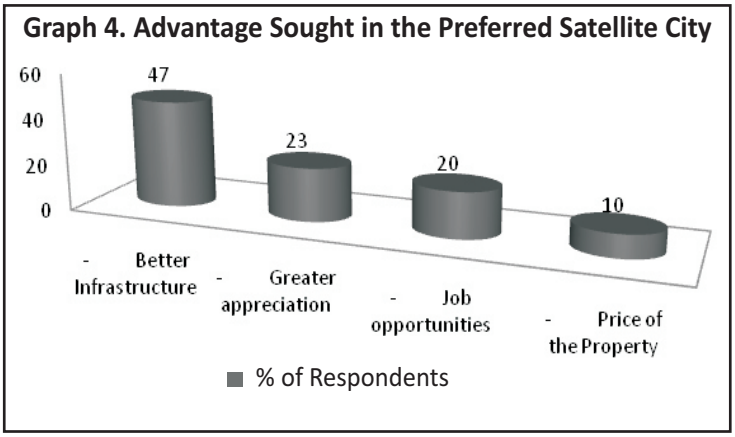
by all means necessary. Water and power supply were equally significant, but a back up for both can still be made up for. An absence of road connectivity to any township will make it unviable for living. When it came down to choosing a preferred satellite city to live in, Noida came out to be the preferred choice (Graph 3). Evidently, majority of the respondents were of the opinion that they would prefer to live in Noida, when given a choice to live within the NCR ; Noida being synonymous with best infrastructure in the NCR. Gurgaon, inspite of having a larger number of realty players and office base, still remained a second choice, only due to the expectation of greater appreciation and perhaps, proximity to office spaces and IGI Airport. Ghaziabad and Faridabad followed, owing to lower property ticket size.

Better infrastructure scores higher for living spaces than home buyers seeking appreciation in the valuation of property (Graph 4). This is likely to be an easy choice for first-time home purchasers, given the comfort and convenience that sound infrastructure systems such as road connectivity and public transport provide. No doubt, job opportunities and affordable price of the property hold value; however, as far as livability is concerned, a robust infrastructure is what a home buyer comes looking for.

While Delhi does boast of a renovated international airport and a network of flyovers, underpasses, and bridges, making NCR the preferred place to live in is largely attributed to the Delhi Metro, which has made connectivity the buzz word for the residents of the National Capital Region (Graph 5). Metro is a low-cost mode of transport for the daily commuter who has been battling rising fuel costs and traffic jams for quite sometime now. Cost of living has indeed been lower than compared to cities like Mumbai and Bangalore, but that is not really bringing any major advantage to the NCR. This was also reflected in the views of the aspiring home buyers (in addition to better road connectivity for their personal transport).

Physical infrastructure alone is not sufficient to make a place livable. There is a need for social infrastructure that helps and supports the community, its daily needs, and its growth in terms of intellect and well being. Education in the recent times has assumed much greater significance as schooling as well as college and subsequent job oriented training has become a need of the hour for the city dwellers of today (Graph 6). Provision

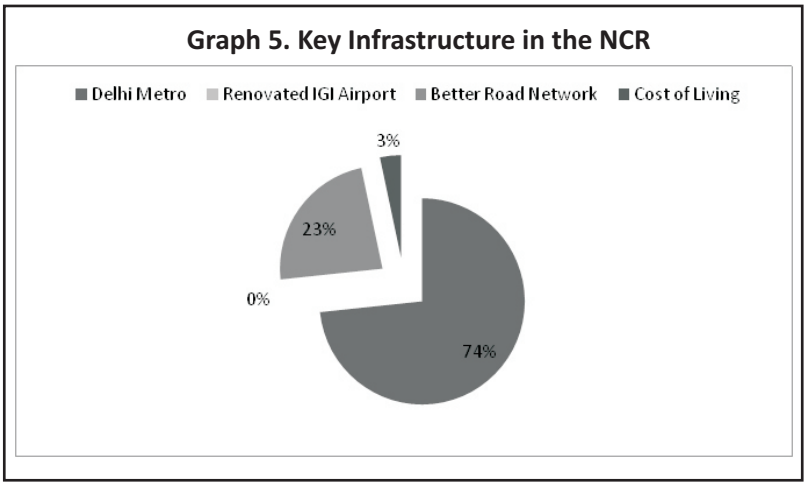


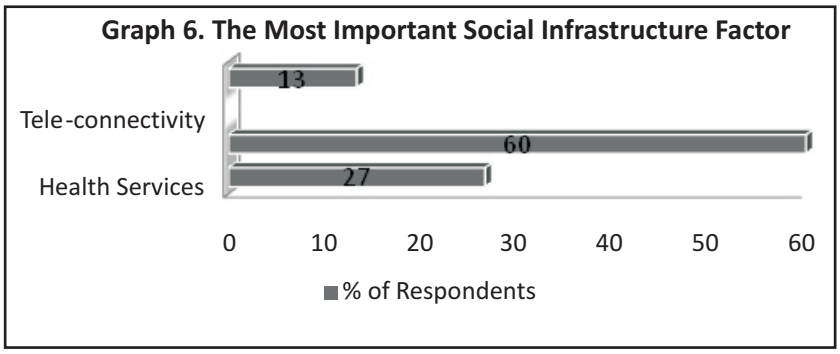


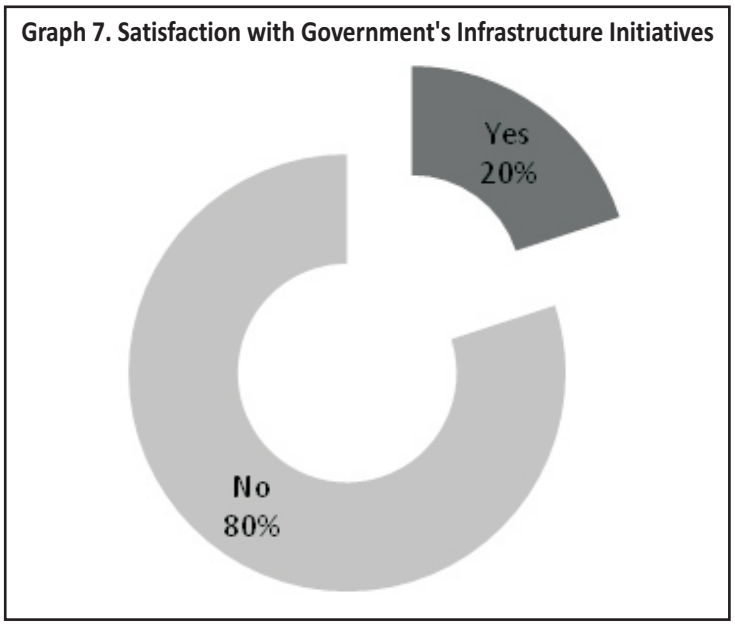
of health services also commanded the preference of a sizable respondent percentage, who may need to avail medical facilities in the wake of ageing population and lifestyle and stress related complications.

Despite such a great need to built infrastructure and maintain it, more than 80% of the respondents felt that the State is not delivering enough on that front (Graph 7). It is also evident from the literature review that there is a need for the government to lay greater stress on delivery of infrastructure projects that have been delayed and are pending for approval. The new home buyers' expected the public infrastructure to be ready and in place prior to giving townships a go ahead. Evidence also shows that infrastructure holds high priority beyond NCR, when a greater preference is given to Chandigarh over Bangalore (by IT companies) for having a better infrastructure ("IT companies prefer NCR, Chandigarh over Bangalore: ASSOCHAM," 2011) (Graph 8).

Designed by Le Corbusier, the renowned French architect, Chandigarh was a township built around an established and robust infrastructure that has stood the test of time. No wonder it continues to be called the "The



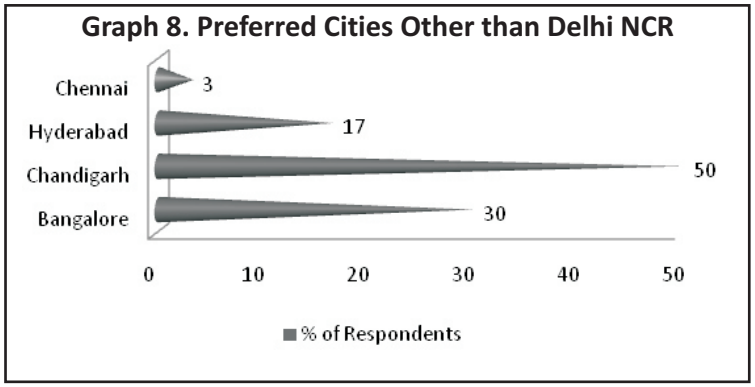


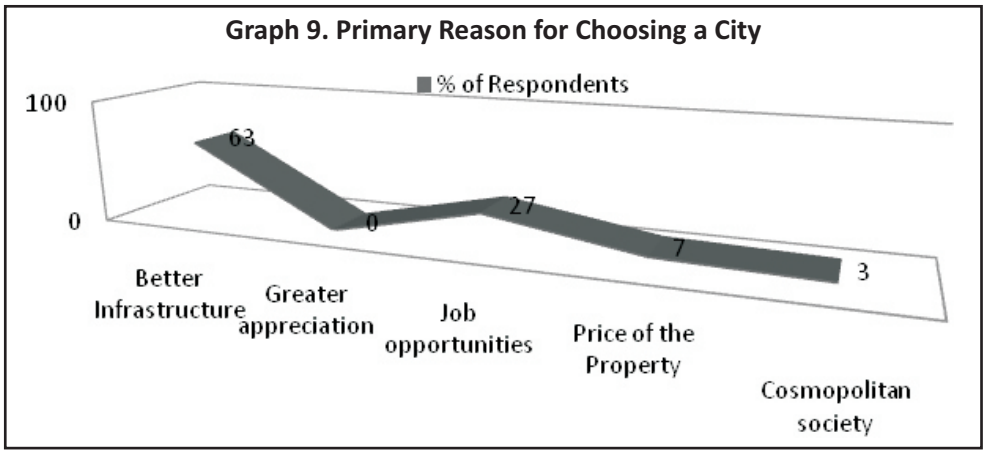


City Beautiful" till date. Although, Bangalore does offer more job opportunities than Chandigarh, this reaffirms the fact that sound infrastructure base is always the top priority for a home buyer against all other variables (Graph 9). This is despite the fact that Bangalore does boast of greater job opportunities for the urban dweller than Chennai, Hyderabad, and Chandigarh. Sometimes, a home buyer would seek a healthy balance between job opportunities and future valuation of properties in terms of investment. However, even both the above two variables are dependent on growth of infrastructure in a given region to have industrial investment and job creation (Graph 9). In case of Gurgaon, the close proximity to the mega structure of Delhi international and domestic airport makes it an attractive destination for organizations and industries. Even the cosmopolitan character of the city may take a back seat when it comes to customer preference in the long run.

The home buyers' aspirations did not stop at just the existing infrastructure. The need for low cost alternate energy is what the future townships will have to look at. There is undoubtedly a need for introducing solar power in residential communities in addition to energy-efficient designs (Graph 10). Recycling of water supply in the wake of dwindling ground water is also a need of the hour. Furthermore, to support the ageing community, internal transport in large living spaces may be made available. Not only was there a willingness to pay for higher cost of infrastructure, but also the high cost of building alternate and futuristic technologies did not prove to be a deterrent for the home buyers (Graph 11).

It seems that the respondents did not just aspire for low cost or budget housing, but also understood the benefits of the initial investment in renewable-energy sources. This is something that we call the 'lowest effective cost'. Majority of the respondents (aspiring home buyers) felt that the developer communities, as well as the government





agencies engaged in providing infrastructure-related services, had not met their expectations (Graph 12 and Graph 7). While the public - private partnerships, such as the Delhi Metro Rail Corporation, may have emerged as success stories of the present day, the PPP model leaves a lot to be desired (Graph 13). This is despite the fact that the resident communities have shown the willingness to pay extra, or in other words, assume a stakeholder role in design and delivery of infrastructure that enhances their livability in a given area (Graph 14).

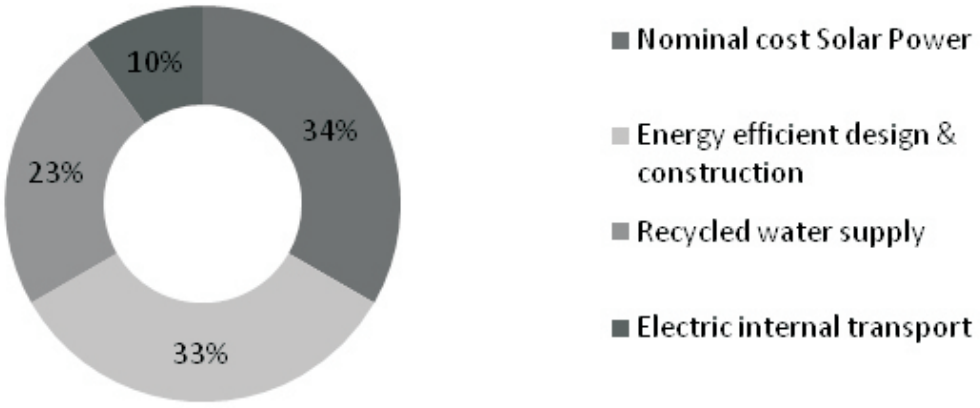
Despite all the innovations in civil engineering, building technology, and progress made on the ground, there are concerns that need to be addressed. Safety and security has been a much neglected aspect, which in all its probability, needs immediate attention not just from the government and the law enforcement agencies, but also from the community as a whole (Graph 15). A new initiative for investment is the need for newer alternative sources of energy, which could perhaps address the dire power shortage in the urban living spaces. Stalled projects, such as the interconnecting of the rivers, may also provide a new impetus in bridging the gap of clean water supply to the communities around us.

Implications and Recommendations

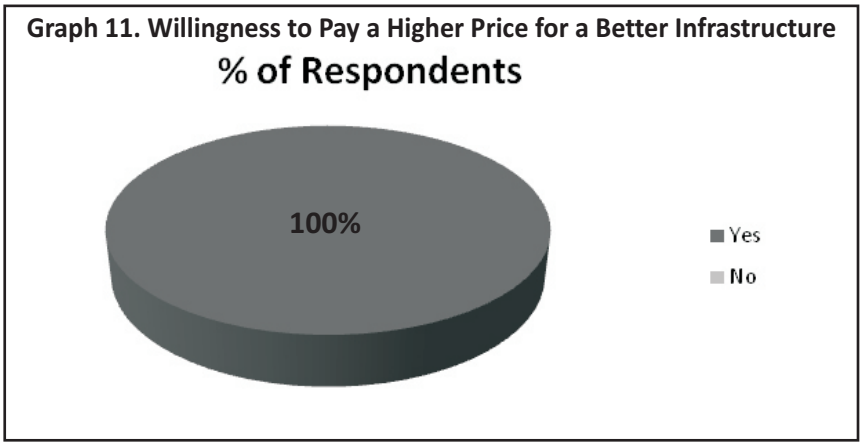
➲ Road connectivity is the infrastructure element having the highest priority in the NCR, as evident from the above findings. Noida was preferred over other satellite townships of Ghaziabad, Gurgaon, and Faridabad, which implies that a better road network of international standard, which Noida has, is a highly desirable feature for home buyers. This implies that the developers and public authorities need to focus on providing robust road networks alongside housing complexes to enhance buyer confidence.

➲ Well planned cities like Chandigarh continue to lead the race, overtaking Bangalore as a preferred city beyond the NCR. Thus, when it comes to choosing a particular city to reside in, job opportunities and financial aspects

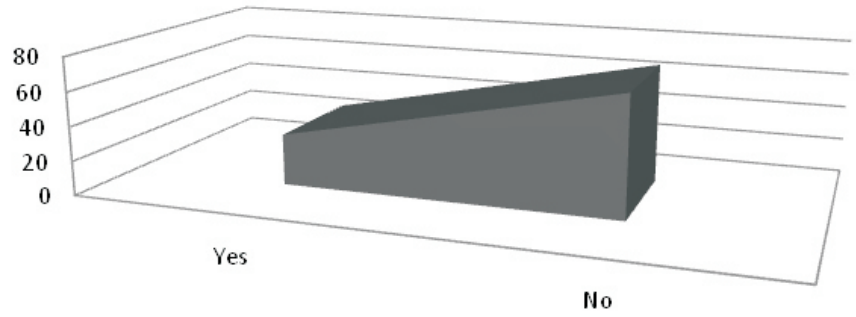
Graph 10. Desirable Infrastructure Factor in a Residential Community



Graph 11. Willingness to Pay a Higher Price for a Better Infrastructure

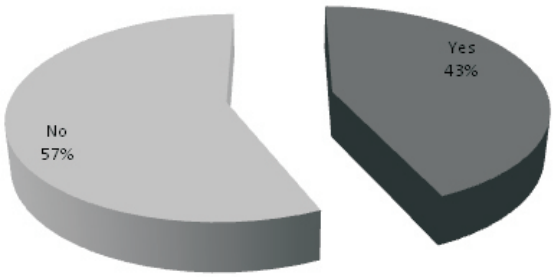


Graph 12. Satisfaction with Developer Community's Concern for Infrastructure

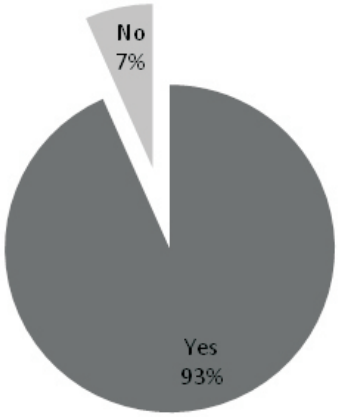


	Yes	No
% of Respondents	30	70

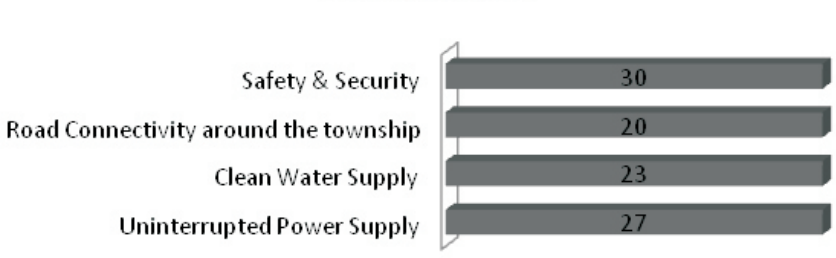
Graph 13. Satisfaction with Infra Projects Build on the PPP Model



Graph 14. Willingness to pay more for the Initial Cost of Renewable Energy Systems



Graph 15. Infrastructure Needing the Highest Attention



assume less importance, as compared to quality of life offered by better infrastructure to individuals. Urban development by the government and private companies needs to be systematic and sustainable, not just focused on job creation and economic growth.

➲ Reliability of the developers in the NCR and their concern for infrastructure leaves much to be desired because only a minority percentage of the respondents felt that the developer community was concerned about the surrounding infrastructure in their townships. The builders and developers need to take an initiative in not just constructing homes, but also participate pro-actively in contributing to the overall infrastructure development alongside the State authorities to strengthen their credibility.

➲ A little less than half of the respondents felt that the public - private partnerships will still be a workable approach and expressed satisfaction with infrastructure projects under this model. The public and private enterprises can improve upon their quality of execution and delivery of projects on the anvil and under

construction in order to enhance the faith of the end users.

➲ Innovation and investment in renewable energy and sustainable housing is desirable. Even the customers showed a willingness to pay a higher price for it .

➲ Safety and security need the highest degree of resource allocation in the light of rapid urban development, almost 10% more than road connectivity (Graph 15). This will require not just developer and State measures, but also renewed efforts from law enforcement agencies, public representatives, and the community as a whole, in the light of rapid urbanization and increased societal responsibility towards women, children, and the elderly.

Managerial Implications

The real estate and urban development sector has been largely considered a subset of the infrastructure sector. However, from the above findings, it is evident that infrastructure development has also been driven by construction of residential spaces in the NCR. Introduction of the Rapid Metro as an extension of the existing metro network in Gurgaon can be seen as one such measure, wherein a private venture has come into being with pro-active support of the public enterprises. Such measures not only enhance convenience for the commuters, but also re-affirm the faith of prospective residential buyers in public - private partnerships. Having said that, infrastructure development is one area where real estate developers and public sector enterprises can work and manage symbiotically, thus delivering unprecedented value to the citizens who could also be prospective customers.

Other innovations, such as alternate energy based electric power, and rapid rail transit systems can also emerge as new drivers of real estate growth in the times ahead. Engaging the local communities, urban as well as rural, can add further impetus to a people-public-private partnership that can help create state-of-the-art townships that are not only sustainable, but also affordable for the rising middle class in the Indian context.

Conclusion

Infrastructure is the single most important factor for an educated home buyer for the simple reason that the end user seeks a living space that has a higher livability in comparison to another one that does not. It is a basic necessity to have a support infrastructure around living spaces either prior to the housing development or in tandem with the growth in real estate construction in a given township. Furthermore, a buffer capacity must be kept in reserve for further expansion in the support infrastructure, be it the expansion of the road width or increase in load bearing capacity of the power supply grid.

Thus, there is a never-ending quest to innovate not just in terms of design and development of efficient urban living systems, but also ensuring that the support is provided in terms of social infrastructure by the government agencies, developers, and construction consortiums to the end user community.

Limitations of the Study and Scope for Further Research

While the study has largely focused on the urban NCR, there is a section of NCR, which is highly rural in character and is spread across Delhi, Noida, Ghaziabad, Gurgaon, and Faridabad. A sizable population is still engaged in agriculture and is based in villages across the four districts and the state of Delhi. Quite a few people in these regions have aspirations as well as the purchasing power to acquire homes in urban townships in NCR. Furthermore, there is the greater NCR, which is being brought under the purview of cities beyond Delhi and the above four, such as Alwar in Rajasthan, which form a part of NCR and have not been covered in the study. In addition, due to time constraints, the study only considered the responses of 30 respondents, which is an inherent limitation of this study.

The study has focused on the National Capital Region in and around Delhi. Researchers in the future can study other metropolitan cities such as Mumbai or Chennai, which have significant satellite townships around them. While the urban buyer has been studied, a large section of rural buyers with requisite disposable income in and around NCR can be studied, as they move from rural areas to new urban townships. The extended NCR can also be studied for future research that is inclusive of Rohtak, Sonepat, Alwar, Baghpat, Bulandshahar, and Meerut, a city with a greater vibrancy index than Mumbai (Morgan Stanley, 2011).

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