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SMART CITIES - Futuristic and Sustainable Development

The most important aspect of any smart city is the citizen participation; any city is as smart as its residents, writes. **Prabhakar Kumar.**

The fast-paced economic growth in the recent decades has brought new challenges to India. The high-income millennials aspire for world class living standards. India has shown immense improvement in the standard of life in the urban area with the help of technology, however, the ever-growing population and continuous migration from rural areas have negated the effects of the modern technology.

Despite having world class roads, electricity, public transport facilities, malls & super-markets, internet connectivity; our cities are becoming more and more unliveable with every passing day. Poor environmental conditions, traffic jams, garbage etc are omnipresent.

However, in order to tackle such problems, government, corporates and community are relentlessly working towards the developing sustainable cities which are not only smart but also offer quality life.

What is a Smart City?

A smart city is a city built with people in mind. Smart cities consider giving their residents good life rather than just providing them with living and

working spaces. A smart city is one which makes the optimum use of its resources to provide maximum utility to its inhabitants and reduce costs & waste. The residents of a smart city have better air quality, connectivity, hygienic surroundings and open green spaces to spend time with the nature. They don't need to unnecessarily commute for work or other services. Smart cities are also better prepared and equipped to fight any disaster whether man-made or natural.

In course of time we will realise that the smart cities like Amsterdam, Singapore and Kyoto were better at fighting the Corona Virus outbreak compared to other cities, no matter how modern.

What Makes a City Smart?

Smart cities leverage technology to serve people. Connectivity and information sharing lie at the core of any smart city. Connectivity and information sharing help share and utilise the resources better than traditional cities.

Smart cities have data collection facilities at every possible location. These data collection facilities could be traffic & surveillance cameras, parking slot availability sensors, temperature & air



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quality sensors, solid waste sensors etc. Street lights, garbage cans, hospitals, government vehicles, toll plazas, supermarkets etc could be the places to install these sensors.

Need of Smart Cities in India

By virtue of the second largest population in the world, Indian cities are heavily crowded and extremely polluted. Six out of world's top 10 polluted cities are in India. The infrastructure is already under tremendous pressure.

India will be one of the worst affected countries due to global warming. Cities cover only 2 percent of the total surface of earth whereas they are responsible for around 70 percent of the world's total carbon emission. If India wants to fight the menace of pollution and minimise the impact of global warming, it needs to focus on making its cities smart. India cannot stop the process of urbanisation or hamper development just to fight climate change.

It needs to build smart cities and convert the existing cities into smart ones to reduce pollution, garbage, crime and improve its preparedness for catastrophe, man made or natural.

Components of a Smart City

As mentioned above, smart cities are built around the citizen. Following are the components which make any city smart.

e-Governance

e-Governance is the most important aspect of any smart city. Real time collection of data and using it for the benefit of the citizens is at the core of the smart city concept. e-Governance can reduce unnecessary travel for the residents.

With effective e-governance, citizens can pay

their utility bills, book services, order groceries, file complaints, request health services and stay connected with their local authorities through their smart devices connected through internet. This helps reducing the burden on the infrastructure and save time. In case of any emergency (like terrorist attack, disease outbreak), the local authorities can also stay connected to the residents and prevent large scale damage.

Effective traffic control, crime reporting, resource allocation, waste management and spreading awareness are some of the other things that could be easily achieved through e-governance.

Smart Traffic Management

Traffic management is one of the biggest challenges being faced by most modern cities. People are spending more time in their cars than at home or work. The key to the success of any city is the traffic management. Smart traffic management can be further broken down to the following points.

Promoting Public Transport

Efficient and reliable public transport can help reduce the number of private vehicles on the roads. Lesser number of vehicles on the roads would mean the faster mobility and lesser jams on the roads. However, to ensure the success of the public transport, reliability is the key. If citizens get real time information regarding the service and availability of the public transport, they will be able to rely on it and make informed decision.

Zero mile connectivity facility should be there for all stakeholders to control the private vehicles on road with various segregated models like shared transportation facility. This will reduce the number of four vehicles on road and result in smooth transport

Smart cities help raise the standard of life by applying digital intelligence to cope with the real-life urban situations.

movement. Footpath should be build barrier free for all stakeholders use including disabled and elderly persons with varies facilities.

There should also be the provision of seamless transition from one mode of public transport to another. For example, smart cities should ensure that a person buys one ticket (or smart card) and can use it for all modes of public transport, metro, bus or tram. This will make the journey more comfortable and save time.

Traffic Management and Parking

Traffic management with real time information collection and sharing will ensure the citizens can make informed decisions. For example, sharing information about the traffic situation in the local area, availability of parking spaces, mishaps or road blockages etc can help the residents decide when to take personal vehicles and when to use public transport.

In case of accidents or any other emergency, with proper information sharing, smart cities can allocate proper resources for better control over the situation.

Solid Waste Management

Indian cities are getting choked with garbage. Bangalore once known as the garden city has turned into garbage city³. Solid waste management is a fundamental pillar of any smart city. Waste management in a smart city is taken in a holistic manner, from collection to segregation to transport and to its treatment.

In traditional cities, solid waste collection is mostly done without proper demand analysis, which often reduces its efficiency. Some of the solutions that smart cities can have for efficient waste collection could be segregation at source, sensors attached to garbage bins to measure the level of fill & communicate to the nearest collection vehicle and solar powered waste compacting bins.

Since collection is the most resource and cost intensive part of waste management, smart fleet management based on real-time GPS data provides effective management and cost reduction possibilities. RFID technologies are also available for segregation of electronic waste based on different attributes. This helps in identifying recyclable waste and disposal of non-recyclable.

With effective e-governance, smart cities spread awareness among their residents for reduction of waste and reusing the material as much as possible. Smart cities try to recycle as much of their waste as possible.

Open Green Space and Green Infrastructure

No city can be called complete or smart without the inclusion of spaces for individuals to enjoy life and find themselves close to the nature. Green spaces act as lungs for cities. Green infrastructure

helps reduce electricity & water costs and minimize the generation of waste.

Citizen Participation

This perhaps is the most important aspect behind any successful city. Green cities encourage the participation of the citizens in local governance, waste reduction, pollution control, crime reporting etc.

Through e-governance, the local administration runs awareness and data collection program which help them understand the locality better. Citizens in smart cities use their smart devices and internet connectivity to share real time information with the administration to solve problems, understand local needs, allocate resources effectively and control of (mis) information.

Any city which does not encourage or have citizen participation can never be truly smart no matter how much technology is introduced.

PPP Model for Smart Cities

The resources of the government, if combined with the professionalism and efficiency of the private sector can do wonders in building smart cities in India. It is estimated that only 16 percent of the cities across the world have enough funds to build and manage their own infrastructure projects⁴.

Investment and participation from the private sector can help the cities bridge the gap of funds needed to convert cities into smarter ones. Recently the Finance minister announced GOI's proposal for developing 5 smart cities on PPP model⁵. Some of the areas where the authorities can collaborate with private parties are:

- Developing new infrastructure (roads, public transport, parking spaces, water supply savage, electricity etc) or refurbishing the old infrastructure. Such partnership can be done on BOT model.
- Monetising data sets to create applications and other solutions.
- Management contracts

Conclusion

Smart cities are the future of the world. They are raising the standard of life by applying digital intelligence to cope with the real-life urban situations. This application on one hand is reducing costs, on the other it is also increasing the responsiveness of the administration.

Governments and private sector are relentlessly working towards making cities smarter to provide better life standards and reduce the environmental as well as financial impact. However, as stated earlier the most important aspect of any smart city is the citizen participation.

Any city is as smart as its residents. No city can become smart and successful unless the community is determined to make it happen.

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