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SMART CITY DEVELOPMENT IN INDIA: A FUTURISTIC APPROACH

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ABSTRACT

Indian government in recent times has carried out to develop 100 cities as 'Smart Cities' to meet the demands of present era and to maintain the rapidly growing speed of development as well as the demands of urbanizing population. This effort will include construction of new municipalities' corporation and entire renovation of existing cities as the rural population shifts into urban areas. The present study attempts to see the sights the concerns, challenges and consequences of developing smart cities before government. On the basis of observation the study concluded that government can have to face technical, political, environmental, financial and academic challenges. There can be few favourable and unfavourable consequences of developing smart cities. World ten smartest cities were also cited in the paper with the parameters of their smartness to get guidance for developing smart cities in India.

KEYWORDS: Smart City, India, Challenges, Consequences, Concerns.

INTRODUCTION

India is known as agricultural land and almost half of the population of India is residing in rural areas. With the passage of time many technical & scientific inventions and discoveries are taking place and these fast changes are the part of urban areas more than rural areas. As there are many obstacles in procuring theses changes in rural areas and these obstacles are:

- Uninterrupted power supply
- Poor transportation facilities
- Poor connectivity with urban areas
- No internet facility
- lack of proper infrastructure

- lack of communication facilities
- Lack of education facilities, etc.

These obstacles made rural population to migrate from their rural native place to urban areas. There are many lucrative aspects in urban areas which make rural population think to migrate. Few of them are:

- To acquire good education facilities.
- To earn good amount of money.
- To get good employment opportunities.
- To give good and modern environment to family.
- To raise standard of living.
- To avail good quality services and highly technical products easily.
- To avail specialized technical apparatus and equipments.

Apart from afore pointed out lucrative aspects one more aspect the Indian urban areas are experiencing from last two-three decades is townships. Township with full of modern amenities are developing very rapidly in India and now Indian government has introduced the concept of 'smart city' and many of the Indian cities are being under the phase of smart city.

'Smart cities' aim to decrease the challenges that cities are facing these days like scarcity of energy resources, healthcare, housing, water and deteriorating infrastructure (roads, schools, hospitals and transportation). Cities also go through from the problems of price instability, climate change and the demand for better economic opportunities and social benefits (Washburn, et al. 2010).

A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens (Hall, R. E., 2000).

Technological, industrial, academic and environmental aspects of cities need to be changed to form them into a smart city. There is a need for an increased level trust between city government and the citizens to make a city "smart city'. It is not the responsibility of government only but all the citizens (by supporting and helping the government), industries (by supporting with financial models and innovative development) also. To accommodate the entire unban as well as migrant urban population in cities the government (by making various housing schemes and loan facility) and construction and development fraternity (by providing good infrastructural support) are trying their best.

By transforming a city into 'Smart City' many environmental issues should also be recognize and concerns, consequences and challenges before the government in present scenario in view of pressing environmental needs will be a tedious task. The present study is an attempt to identify these challenges and consequences that the government is facing and will face in near future with the help of observation.

LITERATURE REVIEW

Correa (2014) stated the importance of reforms. "The promise of government to build 100 smart cities will require not only new technology but also drastic reforms in the political and institutional environment in which our cities function, with a focus on connectivity, integrated land and transport planning, and environmental sustainability."

Aoun (2013) said since getting smart implies a continuous improvement of the urban situation, each city can be 'smarter' (Electric n.d.). Obviously, many factors can accelerate or hinder this 'continuous improvement'. For example, existing policy frame works, recent practices in integration of technology in urban infrastructure (Near n.d.), and high level of technology advancement in a city can lead to better success in 'smart' development. However, there is no absolute limitation to the implementation of Smart Cities.

Heller (2013) argued that getting a right balance of market, the state and civil society will facilitate inclusive and democratic forms of development. It is substantiated with analysis of the role of transnational activism and how social movements and civil society have shaped different developmental trajectories in Brazil, India and South Africa.

Ghani (2012) emphasized on the cities governance aspect and stated that the concept of "Smart Cities" is "really about good governance. It is about giving services to our citizens. It is about liveability. It is about how we are using our resources. It is how a city functions on a day-to-day basis. I think smartness is about doing more with less."

Kourtit et al. (2012) highlighted the significance of mobilising all the resources and put emphasis on creativity and knowledge as the key factors in maximising innovation potential of a smart city.

Chourabi, H. et al (2012) included in study that making a city "smart" is emerging as a strategy to mitigate the problems generated by the urban population growth and rapid urbanization. Yet little academic research has sparingly discussed the phenomenon. To close the gap in the literature about smart cities and in response to the increasing use of the concept, this paper proposes a framework to understand the concept of smart cities. Based on the exploration of a wide and extensive array of literature from various disciplinary areas we

identify eight critical factors of smart city initiatives: management and organization, technology, governance, policy context, people and communities, economy, built infrastructure, and natural environment. These factors form the basis of an integrative framework that can be used to examine how local governments are envisioning smart city initiatives. The framework suggests directions and agendas for smart city research and outlines practical implications for government professionals.

Caragliu et al. (2011) smart city models are increasingly addressing political aspects. This priority area model builds on the principle that communities that are empowered with evidence based knowledge, which is considered as the guide to the development of social policies and practices (Mullen, 2014), will work toward creating Smart Cities.

RESEARCH QUESTION

With the above in mind, the study addressed following research questions:

- What are the concerns of government while developing "Smart Cities'?
- What are the consequences of developing 'Smart Cities'?
- What are the challenges before government as developing 'Smart Cities'?

OBJECTIVES OF THE STUDY

- To identify and discuss the concerns of the government in present scenario in view of developing 'smart cities'.
- To study the consequences of developing 'Smart Cities' to government in present scenario in view of developing 'smart cities'.
- To find challenges before the government in present scenario in view of developing 'smart cities'.

RESEARCH METHODOLOGY

The study

Present study tries to make out the problems faced by government while developing 'Smart Cities' and also the consequences of these 'Smart Cities' on environmental grounds. The study is descriptive in nature. The observation method is used to accomplish the objective.

Data Sources

The secondary data source was used to achieve the objective. Various government reports, news bulletins, previous studies on smart cities, magazines were used to reach at conclusions. The internet and journals both printed and electronic were used for the purpose.

Findings and Discussion

While making cities smart government will have to face few challenges that are discussed briefly here:

Technical Challenges

- There is problem of technical knowledge regarding interoperability.
- There is unavailability and compatibility of software, systems and applications.
- There is lack of integration across government systems.
- The implementing of IT infrastructure is a costly issue.
- A high cost is involved in security applications and solutions.
- Installation, operation and maintenance require high cost.
- There is a problem of viruses and trojans.
- Highly educated IT professionals and consultancies in the field is required.
- To train people is a tough task.
- To maintain privacy of personal data is hard-hitting work.

Financial Challenges

To build a city smart requires high level of financial investment. Finance is the chief driver of smart city initiatives. The Government of India has proposed to make India a Smart Place by making 100 cities as Smart Cities. In developing these cities a huge amount of money is needed because almost all aspects of these cities need to develop.

Academic challenges

Academic institutions can play a vital role in developing smart cities by conducting researches and exploring various aspects which government can face in this duration and also can suggests solutions to overcome these difficulties although this is a big project and government has already made researches in the context but further to explore more issues academic research can help. The government can make few guidelines and should also provide financial supports to academic researchers to work on this important and critical subject.

Political Challenges

India is a democratic country and the government operating in the country is elected by population through voting. There are many political parties in the country which are termed as opposition against the elected political parties and viewpoints of all the parties may be different on one issue. This way the government can have to face many rejections and problems form the oppositions. To make agree to all on one task together is quite a challenging job.

Environmental Challenges

Human beings are solely dependent on nature to collect resources which not only compulsory to live but also necessary for the industrial and other developments. Roads, bridges, dams, multi-storey buildings and other constructions will be infrastructural development and the part of smart cities. These constructions adversely affect the environmental resources and this way the human life hence the immense care and other remedial steps must be taken to save the environment.

Apart from these challenges, few more are lined up below:

- Poverty is also the biggest challenge before the government.
- The people below poverty line cannot avail all the facilities of smart cities.
- The illiteracy is also very crucial issue. It is difficult to make understand the concept and other aspects of the development to the uneducated peoples.

Concerts of the Government

Development of Country

India is developing very fast not only on technical grounds but industrially as well. The service and manufacturing sector of our country is also witnessed of the fast growth. Also we are agriculturally sound and producing good quality and large amount of agricultural products which easily use to export in many other countries and India earns handsome amount of foreign currency. To come under the umbrella of developed countries India still needs to develop on the above discussed aspects. With the concept of Smart Cities, Indian government wants to improve the condition of the cities and this way can also arrange numerous job opportunities in these cities by setting up industries and other software, manufacturing companies. This will cause to reduce the unemployment rate, better level of standard of living of citizens, good per capita income, high literacy ratio, better education facilities, etc.

Development of Citizens

It is very well known fact that if organization will grow, the employees will grow automatically and vice versa. Similarly if the country will grow the citizens of the nations will also grow simultaneously and vice versa. The Indian government aims to develop the level of citizens by developing cities as smart cities because when the citizens will be developed they will help in making our nation developed. Government making hard efforts to make realizing the citizens by spreading awareness on agendas like "Clean India, Green India", "Make in India", "स्वच्छ भारत अभियान". Slowly but surely now citizens are taking interest and helping our government to be on the track of the agendas. Undoubtedly till 2020 our country will be free from the tag of unclean country by the joint efforts of government

and populace. In addition, India can fight with the very diseases which are due to polluted environment and can reduce the rate of death as well.

Quality Amenities

With the concept of 'Smart Cities' government will make available plentiful fundamental and essential amenities to the citizens which will help them to grow speedily and will help them on various aspects. Amenities like –

- Better road and other transportation facilities to all the residents.
- Better housing facilities to all.
- Dam and bridges where needed will be developed.
- Better healthcare facilities to all the citizens.
- Clean and clear water to all.
- Internet facility at low rate to make available.
- Better schools and quality teacher and education facilities.
- Quality of life

Increment in Tourism

Tourism is always been a foreign income generation avenue for government. When tourists visit our country not only government earns but the citizens who are in business and in service earn good as well by providing the tourists the necessary products and services. The 'Smart Cities' will definitely increase the arrivals of tourists in our country and in turn will increase the foreign income of our country. India will get more exposure this way and undoubtedly others door of opportunities can open for India.

Consequences

There are many favourable and unfavourable consequences can be seen in developing smart cities. Favourable consequences of any phenomenon are easily get accepted and enjoyed but the unfavourable consequences usually get rejections so the government should have to be prepare before hand for such consequences and should also prepare some plans to tackle such conditions.

The favourable consequences will be:

- Better Transportation
- Better Technical Support
- Better Healthcare Facilities
- Better Water
- Better Schools

- Better Housing
- Less Costly ICT
- Entertainment facilities

The unfavourable consequences will be:

- Pollution: Many vehicles and industrial machineries will produce the air, water and noise pollution.
- Environment can get affected adversely.
- The consumption of petrol, diesel will increase as these are not renewable resources.

The following table lists up the top ten smart cities of the world:

Table 1: World Top Ten Smart Cities

Rank	City Name	Brief Description
1	Vienna	• Among the greenest cities on the globe, besides being the city with best standard of life in the entire Europe. • Public buildings and homes here are provided heating facilities with the help of the largest biomass plant in Europe
2	Seattle	• Encourages greener living by giving tax rebates to those who make use of green technology. • Offers low electricity rates and minimal carbon emissions, with the aim to improve quality of life of the citizens.
3	Chicago	• Benefitted from the strategy of technological strategy it has been using in recent times. • Enjoys fast broadband and free Wi-Fi services, in addition to making use of innovative technology for providing excellent services to the local population
4	Stockholm	• Received the award for Intelligent Community of the Year in 2009 and European Green Capital in 2010 • First city to have a city wide fiber optic network and • Pioneer in the field of 4G mobile network • Home to Kista Science City, which occupies some of the biggest technological companies in the world.
5	London	• Has smart transport system • Boasting of facilities such as underground wi-fi, smart parking

		service, oyster card system and congestion charges. • Has used innovative technology to facilitate use of smart phones and also improve health and environmental services therein.
6	Rio De Janeiro	• Has seen a lot of infrastructural development recently • The center of operations set up by IBM in the city has linked all major departments of the city. • The discovery of offshore oil fields has also attracted a great deal of international investment here
7	Singapore	• Technology used as cameras GPS and sensors to prevent traffic congestion and also predict jams. • Equipped with an innovative water management system, to facilitate efficient desalinization of water.
8	Hong Kong	• Has made tremendous investment in its "Digital 21 Strategy", aimed to create excellent e-government services for its citizens. • Boasts of highest smart phone penetration in the world • Provides contactless card payment in public transport, which is now usable at restaurants, parking lots and vending machines too.
9	San Francisco	• Has used technology effectively for bringing improvements in fields like transport, energy, water supply and waste management • Equipped with LED street lights, EV charging infrastructure and parking sensors for better services without wastage of energy.
10	Seoul	• Highly acclaimed smart cities in the world which will play host to the upcoming 5G mobile technology in coming years • Works on the strategy "Smart Seoul 2015", which is aimed at providing the best heath care facilities for the disabled and the elderly, whereby they will be provided second hand tablets and smart phones to ensure that they get timely medical attention when needed.

SUGGESTIONS

A smart city development can be implemented on the three major components basis:

Study of the society: To develop a smart city, firstly the purpose should be clear. The purpose of developing a smart city certainly is development and due to the benefits of smart city, a

city can be developed. Study of the society helps to know the citizens and their needs; the business and industry needs. To know the citizens and the society unique attributes, such as the age of the citizens, their education, hobbies, and attractions of the city that can help to build a city smart.

Make a Policy for Smart City: Making a policy to drive the initiatives which consists roles and responsibilities, objectives, and goals, missions can be defined. Draft plans and strategies on how the goals and missions will be achieved.

Citizens Involvement: Citizens can be involved in implementing the framed policies through the use of e-government initiatives, open data, sport events, surveys, cooperation etc.

Protection of Environment: While developing smart cities the measures to keep environment clean and green should be made and followed.

CONCLUSION

The term 'Smart Cities' itself sounds very high standard and a class containing word and so in the reality is. To renovate a city entirely is not a few days assignment; it is tedious and time consuming project and is also need cooperation of many of us together with the government. Government needs to make policies and strategies; the well qualified and experienced consultants, project managers, constructors can execute them well. Although there are many challenges before the government but the favourable consequences and concerns of government can make it possible to happen.

The environmental challenges before government are really very crucial because to make cities smart it is very necessary to deal with the environmental issues so that natural resources can be retained for the new generations as well. Consequently, the environment maintenance is also necessary to make human life easy and possible.

Few consequences while developing smart cities can adversely affect the environment therefore the government should try to find alternate solutions for them so that the life of human beings cannot be affected in order to smooth functioning of industries and offices as the human beings are the nerve system of the industries and offices. Hence the study concludes that the several challenges the government has to face in view of pressing the environmental needs. The concerns of government are very obvious and also very relevant to the era, thus the government is taking many hard and painful steps to make our country a dream place.

The table 1 listed top smart cities in the world which also included the basis of their smartness. These bases are green environment; green technology; low electricity rate,

minimal carbon emission; quality life of citizens; fast broadband; free Wi-Fi; innovative technology; wide fibre optic network; smart transport system, underground Wi-Fi, smart parking service, oyster card system, congestion charges; technology to facilitate use of smart phones; good health care and environmental services; infrastructural development, international investment; use of cameras GPS and sensors to prevent traffic congestion and also predict jams; innovative water management system, to facilitate efficient desalinization of water; excellent e-government services; highest smart phone penetration; contactless card payment in public transport, which is now usable at restaurants, parking lots and vending machines and LED street lights, EV charging infrastructure and parking sensors for better services without wastage of energy.

These bases can help Indian government to decide the development measure for smart cities in India. In addition some more innovative measures can be implemented to occupy the place in the world smart city list.

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