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A Review of Smart Cities Evolution in India

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Abstract: *In order to improve the quality of life for people, smart cities are a modern urban concept. Various smart technologies are grouped together in order to increase the comfort of human life. This paper highlights the various technologies that are merged together for building a smart city in a developing country like India. Another major aspect of the paper focuses on the kind of technological combinations and their effects used to plan and build a smart city. Finally, the paper concludes by providing an overview of the present status and various challenges faced during the development of smart cities in the Indian scenarios.*

Keywords - Indian Infrastructure, Indian Smart City, Smart City, Smart City Mission, Smart City Features,

I. INTRODUCTION

The new tendency developed amongst the youth of the country is to move towards urban areas for jobs or business, which caused tremendous population growth in urban areas [1]. These areas are referred to as cities or towns, which are more complex, crowded, and difficult to manage as compared to villages. Such cities' services are very closely connected and dependent on each other [2]. If any one of the main systems in the city fails, then it will cause a hugely adverse effect on another service system. e.g. in Mumbai city, if local trains fail then basic transportation is choked and people will not be able to reach their offices, affecting remaining other services. Moreover, all the basic essential services like food, water, and transportation are majorly dependent on electrical energy [3]. If these three services are well organized then it creates a sense of safety and security in people's minds. In order to do it in a more effective manner, these all-essential services need to be coordinated efficiently by administrative authorities and the government, which requires correct and thoughtfully framed policies and a transparent communication network.

This paper aims to focus on current problems in implementing new ideas in the existing Indian infrastructure. The paper also highlights features and policies, which are proposed for developing new smart cities in India. The other major contribution of the paper lies in providing the possible problems and ways to integrate modern smart city technology into existing Indian infrastructure.

The paper is organized as follows: Section II describes the concept of smart city, Section III presents the scenarios of Smart Cities in India, Section IV focuses on the current status and the associated challenges in Smart City, and Section V concludes by summarizing the major finding and recommendation for enhancing the adoption and operation of a smart city in the Indian context.

II. SMART CITY CONCEPT

It is not possible to write the exact definition of the term smart city. However, it can be understood by grouping various resources, technologies, and administrative activities in order to facilitate the wellbeing of people and their sustainable development. The word smart in this context is to indicate improvement and coordination of intelligence in services provided in urban life to improve the comfort level of citizens. This should also improve the security of people along with comfort. The meaning varies from condition to condition, location to location, government to government, people to people, situation to situation. It also depends on the type of available resources and strategies implemented by administrative services to implement these resources.

Smart cities are a combination of various sectors that need equal development in the field of their capabilities, cleverness, and convenience. In this paper, the author explains a few core expected features. All these ideas should help to create basic level ideas about understanding the smart city concept. This entire concept is based on a strong and an automated communication network. Nowadays a modern technology available known as the internet over things, machine learning, and artificial intelligence combination used to produce excellent results [4-8].

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III. INDIAN SMART CITIES

The word Smart city was heavily popular after an announcement was made to initiate and develop 100 smart cities across India, by the Honorable Prime Minister of India. This initiative was taken by the current government and a mission was framed to define criteria to evaluate and select the features and facilities required for this project.

A. Expected features of Smart Cities

Various features were framed for the development of smart cities in India. A few of them are Promoting mixed land use in area-based development, Housing and inclusiveness, developing open spaces, creating walkable localities, different eco-friendly transport options, citizen-friendly e-governance, digital ID cards, and Smart solutions to infra and services. The available land area should be used much efficiently in the case of planned and unplanned areas. This will reduce the traveling time of the workforce in order to improve the quality of their life. If the work to home distance is reduced then a green mode of transportation like bicycles can be easily used by employees. This will reduce carbon emission and also improve the economy of the city. This will also improve the overall health condition of the city. This will also allow people to spend more quality time with their family and friends. So if the distance between workplace and home is taken care of then a lot of benefits can be given to people. The dedicated pathways can be allotted for bicycles and electric buses.

B. Criterion for selection of Smart City

This process depends on its features and done on the competitive challenges. It includes the ideas of competitive and cooperative federalism. In order to allocate the funds, the following process is followed in India. It has been already defined by the government of India. This is a three-step process listed below [9-10].
1. On the entry-level process, all proposals are scanned by considering substantiating the extensiveness and clarity. Once it qualifies the decided criterion, the committee will allot one unique identification number to this application. This initial step is taken care of by the Urban Development, Govt. of India. During this process, priority of applications is also decided by the committee.
2. In the second step, the evaluation of received proposals is done by expert committee members from India as well as out of India. These committee members are carefully chosen by the government by evaluating their expertise and past experience. These committee members conduct regular meetings over the proposal and discuss various points if required.
3. The last and final step is to read and evaluate the review and comments given by the expert committee members. This is done by the Apex committee, which belongs to the Ministry of Urban Development. This final decision can get affected due to various other factors like the priority level, central government opinion, population, the relation between state and central government.

C. Missions and Policy Schemes available in India.

The Honorable Prime Minister of India is well known for his capability to execute bold and tough decisions. On 25th June 2015, he introduced a concept of Smart City Mission for the next five years in India. This mission includes a restructure and renewal plan of existing crowded cities. It was planned to execute this plan over 100 most populated cities. This responsibility was given to the Ministry of Urban Development which reports to the Government of India [9-12]. According to the roadmap they have planned, the following is a list of very helpful policies or schemes. This will act as a support system in the development of expected smart cities.
1. National Urban Sanitation Policy
2. National Transit Oriented Development Policy
3. Atal Mission for Rejuvenation and Urban transformation
4. PPP (Public-Private Partnership) Models for Affordable Housing
5. Pan City Initiatives
6. National Urban Transport Policy
7. Scheme for developing Special Purpose Vehicle and Urban Local Bodies.

IV. DIFFERENT CHALLENGES AND CURRENT STATUS

The actual current status of these smart cities which were selected for development has been discussed in this section. For further development, the existing situation of these areas is being studied. In order to

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understand the problem in a better manner, few challenges which are faced by this smart city mission are also defined.

A. Existing Situation

The estimated investment towards the smart city development is around Rs 1.9 lac Cr [9]. This decision was already approved by the cabinet and in the case of any additional amount is needed for this project, the state government has been given authority to raise funds in order to develop their plans.

This total investment is divided into two main segments. For specific area based projects identified and approved under the smart city program the amount allotted is Rs 1.52 lac Cr. and the remaining amount of Rs 0.37 lac Cr is expected to be spent on the promotional activities of smart city initiatives under the pan-city scheme.

All India level Smart city competition was held at the national and state level for selecting a list of cities to be approved for this project. The final name list of 100 new smart cities in India was released in three consecutive rounds. 20 cities were selected in round I, another 13 cities was also selected under the fast track round program of smart city mission. After that in round II another 63 major cities were selected and at the end, round III was conducted. Round II resulted in the selection of another 30 cities. These cities selected under these three lists were asked to form a special purpose vehicle resembling a limited company. It has to be formed within the listed city, this company will be authorized to implement smart city plans, and it will develop the city as per the design proposal.

With reference to the existing situation of Indian cities, it has been seen that some common major sectors are holding the backbone of the economy of the city. These common major sectors are Banking, Media, Tourism, Hotels, Energy, Technology, Power, etc. The most popular and crowded cities like Mumbai, Delhi, Hyderabad, Pune, Chennai, etc. are front racers in this project and they are showing huge progress [13].

B. Major Problems Faced during development

There are few important things that should be properly addressed in order to make these smart cities a better place. If these challenges are addressed correctly then the expected outcome of this project can be achieved in minimum time.

1. There is a lack of strong interlinked and interdependent work culture between the state government and central government. This happens due to different ruling parties at the state and center.
2. Leadership needs to be smart and strong. It also needs to be stable in nature, to achieve long-term goals.
3. Absolute errorless common planning is difficult in all cities, so changes are needed as per geographical conditions.
4. Less coordination between planning and execution team.
5. Lack of awareness regarding redevelopment and Greenfield development.
6. Shortage of available funds.
7. Poor resource management.
8. The conflict between state, national, municipal administration
9. Lack of smart and honest people in government administration.
10. Visionary policymakers and implements are not available in ample quantity.
11. People of the city do not show expected support
12. Slow improvements in strategic development activities.

V. CONCLUSION

A smart city is the future of this country. Currently, there are huge challenges available in the path of developing smart cities in India. We have seen a few of these challenges and remedies for the same. In order to make this long-term plan successful, all government administrative services and leaders at various levels need to corporate with each other. People of the existing cities need to cooperate in this development phase. And the planning section has to be experienced, skillful and smart in order to make this a success.

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