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Characteristics of Smart Cities and Their Relationship to Sustainability

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ABSTRACT

Making cities easier to live in requires a focus on issues like ensuring that everyone has access to resources, reducing poverty, managing disasters and risks, allocating land in a way that reduces biodiversity loss and deforestation, and building an energy-efficient, low-carbon society. Any way you slice it, using huge quantities of data in the building of sustainable cities is essential to overcome the daunting problems of urban living. The huge volumes of data being created from environmental and financial sources present an opportunity to improve resilience to natural disasters, the equitable allocation of scarce resources, the quality of life in urban areas, and the speed with which we can adapt to environmental shifts. As more people move to already overcrowded cities in India, they put further pressure on the country's already strained infrastructure and natural resources, leading to a number of social and environmental issues. Managing the infrastructure and asset needs of urban regions presents certain difficulties for policymakers and politicians in general. Included in this list are problems with administration, emissions of ozone-depleting materials, a lack of infrastructure, unemployment, a high waste age, impromptu land utilization, biological system debasement, and the loss of green space. Seeing the critical situation in India's major cities, the government launched the Smart City Mission to address the situation.

Keywords:-Smart, Sustainability, Environment

INTRODUCTION

Cities, in light of global challenges, must serve as "living laboratory" to manage complex mediation concerns such as job creation, poverty, integration, freedom, popular government, health, safety, progress, economic growth, global business sectors, environmental change, and so on. This study proposes a series of solutions for creating 100 new "Smart Cities" in India with an emphasis on Sustainability, Metrics, Adaptiveness, Reporting, and Technology for Inclusiveness (together forming yet another acronym for SMART) to solve the aforementioned issues.

If sustainable urbanization is the end aim, then "smart cities" should be viewed as a continual chance to meet this challenge. Taking this step would be the government's choice to develop a new urbanization plan with a 20-year horizon. Although the state is responsible for urban planning and land use, urbanization is experienced by both residents and tourists and is increasingly linked to

global processes like economic globalization, climate change, and the spread of infectious diseases. Whether the government's goal should be to build "100 Smart Cities," "100 Smarter Cities," or "100 Smarter Cities" is a matter of debate. (Challabathula, 2016)

The primary objective should be to prevent wasteful, overly ambitious settlements like those that occurred in the past when systems either encouraged ad hoc, nomadic settlements that were later regularized or, more likely, made poorly organized economic zones, modern, and land municipalities that wandered aimlessly over the scene with no verifiable takers. Long-term viability also requires conformability and adaptability to the laws of nature. Existing communities that have a large percentage of their people residing in older areas, that waste a lot of resources, and that are particularly energy inefficient are the ones that most require smart arrangements.

The cost of moving to the suburbs isn't always lower than the cost of revitalizing an urban neighborhood that has been left to decay. Urban regeneration projects in cities throughout the world provide evidence of this. Decentralized action in public services, transportation, trash, and wastewater management, and individual participation may be even more beneficial than centralized control over data. Being "smart" and "sustainable" are not mutually exclusive.

Finding and implementing suitable metrics is crucial to Smart City success because it provides the basis for transparency, impartiality, and a sane dynamic. Instead of complaining about the lack of a unified definition, we can use it to our advantage. Taking into account the Indian context, the government must adopt a standardizing rationale for its Smart City idea, select its primary goals, its parts, and develop appropriate pointers such as individual satisfaction, comprehensiveness, level of administrations/execution, etc. to be received during planning and implementation.

The government and administrative structure of India necessitates that Smart Cities be adapted to fit its needs, which means making adjustments across districts, regions, and geographical scales. Their enthusiastic backing is necessary since land development is a State responsibility. The government must provide a clear framework to guide business and separate responsibilities. (Chauhan, 2016)

As has been discussed in this article, a coordinated yet nuanced approach appears to be more trustworthy, particularly if the federal government and individual states supervise financial planning and assembly while also forming smart cities through a public-private partnership (PPP) in which ULB plays a role. For both Greenfield and Brownfield developments, this may be a viable option. The presence of assets is just one of several contributing factors.

Redesigning urban administration and infrastructure (both physical and digital) and exploring the possibility of cross endowment between each other at various phases of an effort is the central test. Prior to launching a comprehensive system that may offer superfluous incentives to private-sector innovation suppliers, it may be useful to construct a modest number of prototypes in future cities where key infrastructure is already built up.

CHARACTERISTICS OF SMART CITIES AND THEIR RELATIONSHIP TO SUSTAINABILITY

Smart cities are characterized by their incorporation of cutting-edge information technology. The following characteristics best describe them:

1. Smart environment- which may be either "regular" or "urban" because it refers to the city itself and the setting in which all of the training takes place. Smart government/e-government : the development of the arrangement of government work utilizing electronic methods in the provision of government benefits, the main applications of e-government in:

- Information: all events and data associated with the city's inhabitants.

- Communication allows for the free flow of ideas and information between the government and the people.

- Transactions conducted entirely online: the transfer of administrative tasks over the internet.

2. Smart people group: The second criterion is the presence of a "smart people group," which indicates the extent to which the city's local area of IT applications and advancements, and the possibility of progress from a typical society using innovation to an inventive society equipped for arriving at creative solutions for its present issues and future development, can exist in the information city and can direct its activities, access its services, and manage its governing bodies.

3. Smart Living: encompasses a wide variety of activities and events that contribute to the delivery of individual satisfaction, such as those in the social, educational, and tourism sectors, and which place an emphasis on the health care system and the transmission of high-quality living arrangements.

4. Smart traffic/clever vehicle: The following is an introduction to the components of the Green City design, which is the result of progress toward sustainability thanks to any management of the arrangement of transport and traffic through the spectrum of innovations that rely on information innovation and can replace the smart development with smart infrastructure and sustainable change to the sustainability of infrastructure (Energy, water, and sewn).

5. Renewable Energy: Green cities are characterized by a decrease in overall energy consumption and an increase in the use of renewable energy sources like solar power, wind power, underground energy, and water force on a city-wide scale, as well as the development of methods to reduce energy consumption on a building-by-building or street-by-street basis. Routes connecting the various parts of the solar-powered city.

6. Water and Sanitation: The city's efforts to reduce energy consumption have had a positive effect on the environment by, among other things, reducing water use and increasing water reuse. Numerous uses made possible by advances in information technology have helped ensure the long-term viability of our planet's regular water supplies. (Damanpreet, 2020)

7. Solid Waste Recycling: One of the most common environmental challenges in contemporary towns is municipal solid garbage. Therefore, recycling it is perhaps the most important criteria for the city's long-term viability and for transforming it from a green metropolis into a source of energy.

8. Green transportation: such as walking and the use of clean methods for transportation controlled by electric or solar powered energy, while decreasing the reliance on conventional modes

of transportation and, if they can't be eliminated entirely, attempting to reduce emissions from them by justifying the usage, through interest in means Public transportation and limiting the utilization of private vehicle.

9. Intelligent economy/ information economy: The management of information-based activities such online commerce, tourism, and government services. In this case, the global economic structure being alluded to is one in which information administrations have monopolies over product development and the organisation of labor. Generally speaking, it denotes "everything that may be converted into a digitised image" since it is depicted via the use of information and communication technologies.

10. The qualities of the information economy: For starters, there are these two parts:

- It isn't connected to conventional economic resources, like capital, crude materials, transport, and so on, and its resources comprise of information and information that don't bring about any utilization of resources or contamination of the environment.

- And it is not tied to topographical determinants, which promotes the division of phases of economic movement and geological dissemination according to the necessities and prerequisites of each stage, via the communications networks that spread around the world without the need for methods for transport and communication without strain on street networks.

11. Green Economy:" is an approach to economic growth that recognizes the importance of maintaining a balance between human activity and the natural biosphere. One of our strengths is our commitment to using renewable energy sources rather than biofuels and conserving energy in all of our operations. Examples include the countryside, quiet locales, the tourism industry, data and analytics exercises, and mechanical and imaginative industries. Recent developments such as the "Smart City" idea have made it abundantly evident that Sustainable and Green provide several advantages.

DISCUSSION

Cities all across the world are using massive amounts of data on topics like transportation, commerce, travel, accommodation, and education to attract investors, spur growth, and make cities better places to live. Thus, the projects revolve on how to present massive amounts of information in an approachable and/or visually compelling manner. In the United States, cities like New York and Boston have benefited from improved management and the creation of new applications thanks to the widespread availability of relevant data.

There is a need to simultaneously create and give information via documenting, publicizing, and creating information organizations, as well as carry out duties on the ground, since there is no point of reference of an organized Smart City in India. According to Tim Campbell's book Beyond Smart Cities, cities will often create learning networks between cities that share comparable degrees of growth, financial structure, and constraints. A flattening of the growth curve for Smart Cities would result from this feedback loop. (Mauree, 2019)

The maxim "resident first" should inform the design of technological systems. Urban transformation is being driven by inventive change, which is intrinsically linked to the fortification of cities and the improvement of neighborhood management. As an example, one major step forward in enhancing local-level participatory planning has been to unlock the 'black box' of urban information locked away on public PCs. Concepts like "open information" and "big data" suggest that public data may aid public defenders and be used for societal good.

To handle urban information for development and practical usage, existing educational and specialized groups should be squeezed into administration. Technology advancement serves as a vehicle for achieving social, economic, and political improvement. Joshi-Ghani sees this as a critical factor for revising "Smart City" regulations. As far as she is concerned, "Good governance" is fundamental to the "Smart City" idea. It has to do with giving the people what they need. That word "tolerability" is crucial.

The issue at hand is the effectiveness with which we employ our available means. This is the normal operation of a large city. The ability to make the most of restricted means, in my view, is directly correlated with intelligence. Potable water, pollution-free environments, ample space for walking and driving, safety and security, health and cleanliness, a reliable source of energy, and stress-free community administrations for even the most menial tasks like paying bills, obtaining death and marriage certificates, verifying property ownership, passing a police background check, etc. were all necessities that could not be understated. The provision of these seemingly insignificant small specialized arrangements has the power to significantly revitalize the estimation of common people.

As time has gone on, the convenience of connecting a smart device to a commonplace object has increased dramatically. However, mobile phones are the primary technology most often used for effective information dissemination, either via pop-up notifications or traditional alerts that have been effectively deployed for local area warnings. A recent research confirmed that a green technology-based application and configuration strategy is seen as a potential solution to existing pollution problems. (Debjani, 2020)

It is expected that customer behaviour may increase the effort required to properly dispose of garbage. Reason being, effective waste management is mostly dependent on individual behavior. Silva further highlighted the fact that effective integration increases resident happiness and prosperity. In addition, their research showed that individual parts alone couldn't guarantee the smart city's functionality in a metropolitan area.

As a result, they conceded that a savvy neighborhood is essential for keeping a few areas linked to strengthen the backing of the smart city concept, especially when environmental cleanliness is a concern. More harmony with intelligent devices, sensors, and code is really required to realize a perfect presentation. This is because there exists a common reasoning between smart structure and other activities in terms of energy management. The result will be reduced energy use and a smaller carbon footprint.

Virtual awards that use rank-based frameworks to represent people' standing may be appealing, according to a study, since reputation-conscious locals are highly motivated by such systems. Virtual awards like identifications and progress following boosts client pleasure in the conduct

passionate and psychological environment, according to a comparative study of the prize arrangement of a publically supporting application. These studies have proven that community dedication is doable and that the right incentive structure may inspire sufficient community backing.

Sasao's recent research has proven that updates may increase investment in local networks. This investigation also provided evidence that including the neighborhood has several benefits that boost the overall success of a project. The objective of raising awareness in the neighborhood is to get more people thinking about the trash in their waterways and what they can do to help clean them up. This may be fostered via the use of various media, such as ticker sheets and cellular phones, to disperse information to the general populace.

Because of its low cost, adjustable size, simple control (no dedicated PC needed), and consistent, smooth looking over, it is generally agreed that the telephone and the board have been successfully used for disseminating information in a variety of applications. However, cell phones are the primary technology most often used for effective information dissemination, either via message pop-ups or conventional alerts, which have been successfully deployed for local area warnings. An innovative aim that might steal the show and swiftly reduce pollution is the application and configuration method using green technology, according to a recent research.

Several differences between the concept of "smart cities" and "sustainable cities" have been discovered as a result of prior study. They discovered that the sustainable city system falls short of meeting the sustainability-related recommendations, particularly in regards to energy and trash management, two major environmental concerns. They have also highlighted the fact that water management remains under-represented. It is generally agreed that more environmental corruption will arise if problems with water management are not addressed.

CONCLUSION

There have been a number of waste management-related researches, but it is only lately that IoT features depending on garbage have been incorporated. The research focused heavily on bettering communication and data transmission technologies, as well as safeguarding confidential information and making the most of data collected by sensors. The capabilities of the IoT platform were also examined in field experiments that focused on logistics (transportation, route, and schedule) for a garbage collection operation. A recent research concluded that a different approach to garbage collection and processing is essential to effectively address the waste management problem in urban areas. They have also highlighted the role that trash anticipation, garbage collection, and value recovery from waste collection play in the transition to a sustainable city. In light of this, the researchers in this study plan to adopt a similarly broad perspective.

REFERENCES

1. Challabathula, Subha. (2016). Urban Environmental Challenges and Management in India (A study on Visakhapatnam smart city) Challenges and Management in India (A study on Visakhapatnam smart city). EuropianAcadamic research. IV. 531.
2. Chauhan, Sumedha&Agarwal, Neetima. (2016). How Smart Cities influence Governance?: A Descriptive Literature Review.

3. Chugh, Damanpreet. (2020). Appraisal of Smart City Mission: Rising Challenges in India.
4. DasaradenMauree, EmanueleNaboni, Silvia Coccolo, A.T.D. Perera, Vahid M. Nik, Jean-Louis Scartezzini, A review of assessment methods for the urban environment and its energy sustainability to guarantee climate adaptation of future cities, Renewable and Sustainable Energy Reviews, Volume 112, 2019,Pages 733-746,ISSN 1364-0321,https://doi.org/10.1016/j.rser.2019.06.005.
5. Deen, Sahab. (2021). Smart Cities and Sustainability Development in India: Prospects, Challenges, and Opportunity.
6. Dwevedi, Rajneesh & Krishna, Vinoy& Kumar, Aniket. (2018). Environment and Big Data: Role in Smart Cities of India. Resources. 7. 64. 10.3390/resources7040064.
7. Ghose, Debjani. (2020). PLANNING A SMART CITY IN INDIAN CONTEXT: A Case study of Patna Urban Agglomeration.
8. Greco, Ilaria&Cresta, Angela. (2015). A Smart Planning for Smart City: The Concept of Smart City as an Opportunity to Re-think the Planning Models of the Contemporary City. 563-576. 10.1007/978-3-319-21407-8_40.
9. Gunna, Pranay. (2017). SMART CITIES IN INDIA: KEY AREAS AND CHALLENGES – CASE STUDY OF CHANDIGARH CITY. International Journal in Management and Social Science.
10. Gupta, Ralph. (2016). Measuring Smart Cities in India.
11. Khushboo. (2017). The Indian perspective of smart cities. 1-6. 10.1109/SCSP.2017.7973837.