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Smart Cities as the Center of Modernization

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ABSTRACT

Smart City is a booming international concept. Smart cities concept reiterates to what we have already been doing so far as Planners and Architects. However, the smart cities concept today, especially in India, in its ideological sense of the term, has more to do with the efficiency and accuracy of our planning systems by the use of resources to get the most benefit, with minimum cost and damage. The conceptualization of Smart City, therefore, varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. The paper aims at understanding the approach for "Smart city" in context to the city Ajmer. The vision statement for Ajmer has been evolved after extensive citizen consultations, self-assessment of the city, and analysis based on the previously prepared city reports/ documents. The city's vision has been validated with the help of various stakeholders along with the mapping of desires of the citizens of Ajmer. The vision is based upon five core themes that have been derived from this process with an aim to develop Ajmer as a global, religious and heritage tourism destination with high quality living and sustainable smart citizen services.

Keywords: *Smart city; Sustainability; Smart citizen; Smart buildings; Smart mobility; Smart economy; Smart governance; Smart economy.*

1.0 Introduction

Smart City is a city with smart infrastructure, smart services or smart people which is easily adaptable to the changing time and needs. There is no standard definition of a smart city. The concept of Smart City varies from place to place, depending upon the level of development and willingness to adopt to smart technologies to make the cities more sustainable. People migrate to cities primarily for employment and to support their happy and comfortable living, they also need quality habitat, cost efficient physical and social infrastructure such as water, sanitation, electricity, clean air, education, health care, security, entertainment, etc. Industries also locate in cities because there are agglomeration economies that provide easy access to labour and other factors of production. Smart cities should be sustainable, provides healthy environment and good infrastructure, conserve heritage, incorporated efficient services and management systems to make the city responsive to the occupants. Various definitions about the Smart City have been given by different organisations as-

- Smart City isa process rather than as a static outcome, in which increased citizen engagement, hard infrastructure, social capital and digital technologies make cities more livable, resilient and better able to respond to challenges, by The UK Department of Business, Innovation and Skills.
- The effective integration of physical, digital and human systems in the built environment to deliver sustainable, prosperous and inclusive future of its citizens, by The British Standards Institute.

1.1 Need of smart city in India

A vision which helps in an urban development by managinging the city facilities and assets in a very

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digital and technical manner. In a country like India the proposal of smart city will help in city evolution by improving the city infrastructure and quality of life. The government aims at improving the city facilities and attain the smart city goals by introducing Automatic traffic Signal, Better public transport facility, Quick accident relief, Smart Traffic System, Data Centre, Face identification system and much more.

The good Infrastructure and information can accessed to further compile in small grids to make the city more efficient. Smart solutions can help in providing smart solutions such as waste water management, maintaining the water quality etc. There is certainly a profound developmental activities of a region. The main aim of the mission is to provide housing for all with an aim of providing a shed to almost 70 % of Indian Population and with better standard of living and approach towards life. The opportunity of employment will give jobs to many and the boom in construction industry and employment will help in nation's economy as well.

2.0 Key aspects of a Smart City

- Competitiveness (attracts investors and residents)
- Sustainability (social, financial and environmental
- Quality of Life (human and social)

Digital technologies are used to improve the quality and performance of urban services, to reduce costs and resource consumption, and to engage more effectively and actively with its citizens. Sectors that have been developing smart city technology include government services, transport and traffic management, energy, health care, water and waste. A smart city should respond to challenges of the present and planned to sustain for the future. Smart City works towards ensuring the best for all the people, regardless of social status, age, income levels, gender, etc.

2.1 How smart cities different from any normal city?

A Smart City is a city that is taking an intelligent and long term collaborative approach to tackle the economic, social and environmental changes. The suggestions are mostly related to garbage segregation, public facilities like toilets, parks etc, upgrading municipal schools and hospitals, improving city.

2.2 Characteristics of smart city

Sustainability, resilience, and quality of life coupled with the concept of technological and energetic capitalization makes a city Smart. A Smart City should have the following characteristics:

Figure 1: Smart City – A Need

Source- www.thinkinfinity.net

2.2.1 Smart energy

Buildings, both residential and commercial, are efficient and use less energy. Intelligent networks and smart efficient lighting system, smart meters should be installed. Better network management optimizes production and distribution of energy. At the management level, an intelligent network improves the detection of failure, data collection, disaster recovery, field operations and techniques upgrading the network.

2.2.2 Smart data

A smart city collects huge volumes of data to be analyzed rapidly to provide useful information to residents. You can install open data portals to publish online city data, this data can be accessed and used for predictive analysis to identify future models.

2.2.3 Smart transport

Traffic planning is, almost by definition, another feature of this type of city. An efficient public transport network that reduces energy consumption and the enabling of bicycle paths are among the parameters to be met. Therefore, in smart cities the use of private transport is reduced, so the famous traffic jams (peak hours) can be minimised.

2.2.4 Smart infrastructure

The analysis of large volumes of data enables proactive maintenance and better planning for the future. Intelligent infrastructure requires the integration of several technologies like IoT, Bigdata etc. The data collected will make future administrative changes.

2.2.5 Connected devices

The IoT devices are a key element of a Smart City. The integrated sensors in these devices gather useful data that can be analyzed to obtain relevant information. The free exchange of information between complex urban systems will be managed in real-time; the integration of the data analysis will minimize accidents and unintended consequences.

2.2.6 Connected mobility

It is essential to move data without interruption through various municipal and administrative systems to build a Smart City. Data should flow freely between systems, giving considerable attention to issues of intellectual property, security and protection of privacy.

3.0 Smart City Development and Progress Indian Scenario

Various initiatives are being taken by the Government of India to convert 100 Cities into Smart Cities. The challenge before the Government is to build inclusive smart cities for all its residents. In a country like India, the process of making a city smart should be people centric. The idea should be to make cities work and perform for the people. Special purpose vehicles are likely to be floated for channelling the funds to build these Smart Cities. Given that the urbanisation level in India is still at just around 31 per cent, far lower than China's 54 per cent, Brazil's 90 per cent and well over 80 per cent in most developed economies.

According to the Ministry of Urban Development, the Smart City Mission marks a paradigm shift towards urban development in the country since it is based on 'bottom up' approach with the involvement of citizens in formulation of city vision and smart city plans and the urban local bodies and state governments piloting the mission with little say for the Ministry of Urban Development. [3]

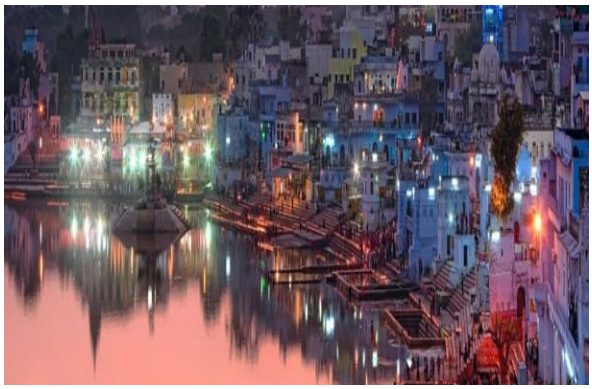
3.1 Case study – Ajmer smart city

The City of Ajmer was founded by Ajay Pal Chauhan in the 7th Century A.D and remained under the Chauhan power until 1193 A.D. Geographically the city is located 78 miles from Jaipur and set at a point where rocky Aravalli Hills end and Thar Desert begin. Ajmer has a history of being a home to many dynasties hence the city portrays a culture reflecting innumerable layers. Ajmer has tremendous heritage and pilgrimage value for both Hindus and Muslims. Acting as a base for visiting Pushkar (14 kms from the city), the city hold a sacred spot for Hindus attracting innumerable tourists. Places of the order of Pushkar Lake, Tomb of Moinuddin Chisti, the one and only Brahma Temple coupled with the mysterious Adhai Din ka Jhopda, form the core tourist value of Ajmer, located in Rajasthan, India, which of now has been transformed into a major educational centre of Rajasthan and India so to speak.

3.2 Vision and goals

India's Prime Minister Shri Narendra Modi strategies for futuristic approach but the local citizens aims and need the basic necessities. Believing in the concept that Cities in the past were built on riverbanks, they are now built on highways and in the future they will be built based on availability of optic fibre networks and next generation infrastructure.

Figure 2: Smart City



Source: www.smartajmer.com

The vision of Shri Narendra Modi of creating and adding the city of Ajmer into the list of Smart City created waves in the city.Ajmer is focussed and planned to be transformed into a 21st century Smart City- an urban planning term by 2022.The vision is to connect the city by grids water, electricity, waste removal, traffic, hospitals and schools are seamlessly integrated with information technology to run them more efficiently. The vision of developing Ajmer as a smart city while conserving the religious and heritage values was evolved and explored after extensive citizenconsultations, self assessment of the city and analysis based on city reports and documents. The issues and problems of the city needs to be analysed at priority level and resolved for an honest application of smart city fundamentals.

3.3 City profile

The population of the city exploded to 578,990 in the year 2016 with a literacy rate of 86.52%.Considering the living style almost 79,887 of the total population live in slum .The city is unorganised in terms of vehicular and pedestrian walkway with single lane contributing to the highest networking .The lungs of the city cover merely 30.94HA of the area as per 2001 census.

3.4 Citizen participation

The citizen engagement strategy was followed through communication information share, focused groups and expert inputs, discussion group, community mapping, collaboration partnership for implementation and commitment decision making. Various social platforms were used for viewpoints and discussions.

3.5 City vision and strategies

Ajmer's Pan-city proposal envisages application of Information, Communication and Technology (ICT) based interventions across sectors that offer city–wide solutions to existing urban challenges including transportation, governance and energy conservation. These interventions aim to optimize resources, and increase efficiency hence focus on improving the quality of life of the citizens. The conclusions of the new innovations was based on active citizen participation and considering various factors such as city profile ,challenges ,threats, and potential value .Apart from various issues faced by the city Ajmer there are certain threats which had to be considered and incorporated before the planning of smart city. Before incorporating any principles of smart city it's very important to understand the various challenges and threats faced by the city. There is a great reliability on Bisalpur dam for water supply. This is reflected in the water supply pattern of the city. The capacity and efficiency of sewer lines due to infiltration of storm water is alarming. This leads to further degradation of environment and water quality. Lakes, the assests of the city which hold an amazing cultural and historical value, have become dead elements of the city and just a garbage dumpyard. This results in bad ambience and environmental pollution which shall affect the working of city in every aspect. The adverse weather conditions due to the location and global warming is affecting the investment opportunities. The ecology is considerably affected due to presence of brick kilns near the lake area. The vehicular and pedestrian movement around the famous tourist spots needs to be resolved for smoother transactions in the city.

The city faced several challenges such as:

- Water supply limited to two hours every alternate day
- Sewerage collection is only 15% as the number of households having sewerage connection in the city is only 2,246 out of 140,000 households.

- Storm water drainage network is only 15 %
- Availability of transport is 40%
- Inadequate parking facility ,inadequate pedestrian facilities
- Inefficient solid waste management
- Inadequate ICT infrastructure for city departments
- Lack of tourism facilities.
- Lack of conservation techniques used for storm water as the storm water presently is diverted into the sewer lines.
- Lake restoration needs to be prioritised as it can improve welfare of citizens and visitors and can act as additional source of the revenue to the city.

The vision is based on five themes as-

Theme 1: A Heritage, Art and Culture City.

Theme 2: A Vibrant Tourism, Pilgrimage & Leisure Destination.

Theme 3: An Inclusive city with Pristine environment & eco-friendly living.

Theme 4: World Class Infrastructure and civic amenities.

Theme 5: Ajmer - A Hotspot of Technology innovations and start ups. The priority goals and aspirations identified for the various themes are discussed.

Ajmer SCP envisages the following two Pan-city initiatives.

1. Smart Mobility Intelligent traffic and transit management system along with intelligent street lighting with an objective to have positive impact on urban mobility in line with city's vision to provide world class infrastructure and services.
2. Smart, Transparent and Citizen-focused Governance Smart Governance initiatives such as command and operation centre and multi-channel communications with citizens for bottom up governance mechanism.

After studying the strength and weakness of Ajmer city there is a certain guideline that was established for the holistic development of the city. The below mentioned strategies shall help in creating a better future for the city and state.

- Encouraging tourist value-The natural, cultural, religious and heritage assets needs to be enhanced to develop the city as a global tourist destination.
- Improving quality of life-Inspite of the many good values the city carries the quality of life is very poor with only 130 to 125,000 homes are connected to sewage system. Drains are uncovered and step wells and lakes acting as garbage dumps. The focus is henceforth on developing resilient infrastructure systems to ensure efficient utilisation of existing resources and using technology for providing better services and facilities to the citizens and the tourists. Development of core infrastructure, social infrastructure, developing open spaces, controlling pollution by creating livable parameters, resource productivity and creating sustainable solutions such as recycling of waste materials, and governance through citizen and business interfacing solutions.
- Increasing the skilled manpower by developing and promoting skill building across tourism, hospitality, local handicrafts and encourage the technological innovation to revolutionaries the entrepreneurship.
- The focus shall be on innovating sustainable development
- The primary issue to be addressed and resolved is the city utilities. This could be achieved by creating sustainable infrastructure. The law needs to get stronger and regulations to be more citizen friendly, by starting to implement smart solutions through citizen –centric collaborative decision making. The mission encourages extensive citizen participation at planning, development and implementation stage.

4.0 Conclusions

The new proposal that has a strong representation for Ajmer's overall vision, aims to solve the current mobility and infrastructure challenges of the city including the development. The proposal includes a multi-modal mixed-use transit hub with efficient circulation for all modes of transit and people and aims to create a future urban destination within the city with a focus on tourism, recreation and leisure. There is a great opportunity to transform the city's ecology and attract tourism with an integrated development approach based on smart urban design concepts.

The Smart City is the urban centre for any sustainable development. There are various concepts of developing a Smart City right from developing it from Greenfield to retrofitting the old city. The

complications are directly proportional to the age of the city. Developing countries are striving towards becoming sustainable models using smart technologies which can be fully integrated with the urban environments.

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