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A CRITICAL STUDY ON SOCIO-ECONOMIC AND LEGAL CHALLENGES OF SMART CITY MISSION IN INDIA

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***Abstract*-- Smart city is an urban region with facilities like smart people, smart technology, smart energy, smart transportation, smart IT, smart waste management and communication and above all smart governance (e-governance) . The notion of smart cities originated at the time when the entire world was facing one of the worst economic crises. In 2008, IBM began work on a smarter cities concept as part of its smarter planet initiative. However, Government of India has also launched the Smart Cities Mission on 25 June 2015 with intent to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions etc.. The India's Smart Cities Challenge is designed to inspire greater creativity from municipal officials and their partners, more involvement and inspiration from citizens, and the development of proposals that will produce concrete benefits in peoples' lives. It is true that Smart city could provide above all facilities simultaneously they also generate a wide range of problems that can be difficult to tackle as they grow in size and complexity. Although smart city is a boon for our country, there are certain hurdles that can affect the execution of the Smart City Mission. This paper is an attempt to focus on the social-economic and legal challenges of smart cities mission in India.**

Keywords: Smart City, Facilities, Challenges, Mission, Communication, Technology, Socio-economic.

INTRODUCTION

The buzzes about smart cities are catching up. Earlier the people were talking only about smart phones, through a series of parallel technological developments globally the concept of smart cities is rising. Smart city is a city outfitted with high-tech communication and technology. It uses digital technology to enhance performance and well being to reduce costs and resource consumption, and to engage more effectively and actively with its citizens. The idea of smart city came into formulation owing to the need to accommodate rapid urbanization of the age. Interest in smart cities continues to grow, driven by a range of socioeconomic and technological developments across the globe. It is due to the increasing number of smart cities that established suppliers from energy, transport, buildings, and government sectors are moving into the smart city market, while startups are addressing a range of emerging opportunities in the same field.

India, at the global level, is drawing on the development of smart cities. Prime Minister Narendra Modi's vision 'Digital India' has a plan to build 100 smart cities across the country. Modi in his speech said, "Cities in the past were built on riverbanks and they are now built along highways." But in the future, they will be built based on availability of optical fiber networks and next-generation infrastructure. Cities are the main poles of human and economic activity. Cities are also the places where inequalities are stronger and, if they are not properly managed, their negative effects can surpass the positive ones. Urban areas need to manage their development, supporting economic competitiveness, while enhancing social cohesion, environmental sustainability and an increased quality of life of their citizens.

The projections made by the Indian Government indicate that through the Smart cities Mission the government intends to achieve overhauling of all the cities. The Government aims to achieve its mission of mart cities by introducing and employing the concepts of retrofitting, redevelopment, Greenfield, and plan city development. The task in hand is humongous and needs efficient use of resources, strategic planning and strong legal framework. Announcement of the project and release of guidelines seem to be a hush-hush affair as despite outlining various aspects of the Smart Cities Mission, there are number of issues that have been addressed and likely to pose as challenges for the mission on its way ahead.

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CONCEPTUALIZATION OF SMART CITY

There is no universally accepted definition of a Smart City. 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. As the concept is being known popularly but used all over the world with different names and in different circumstances, there are a range of conceptual variants generated by replacing smart with other alternative adjectives. However Smart city can be defined as a city which should be equipped with basic infrastructure to give a decent quality of life. In other words it could be defined as a developed urban area that creates sustainable economic development and high quality of life be excelling in multiple key areas like economy, mobility, and environment.

Smart city is a city that monitors, and integrates conditions of all its critical infrastructures including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, even major buildings, can better optimize its resources, plan its preventive maintenance activities and monitor security aspect while maximizing service to its citizens.

The core infrastructure elements in a Smart City would include:

Adequate water supply: Water supply is one of the core infrastructure elements under the Smart City Mission being taken up by the Ministry of Urban Development. Smart city tries to solve water scarcity problems with innovative technologies and the better management of water. Improved metering and flow management are key to a good water distribution system. A smart water management system uses digital technology to help save water, reduce costs and increase the reliability and transparency of water distribution.

Assured electricity supply: Assured Electricity supply" is one of the identified pillars of "Smart City – Core Infrastructure" identified by the Smart City guidelines of Government of India. Smart City Guidelines by the Ministry of Power Governmentt of India, Smart solutions for assured electricity supply considered are (a) Infrastructure upgrades of Sub-transmission and distribution networks: (Better aesthetics with aerial bunched cables, UG cables), (b) At least 10% of smart city's energy requirements coming from Solar (c) Smart metering, robust IT connectivity and Digitization (d) Outage management system (e) 80% Green buildings. Robust IT connectivity and digitalization under smart city mission enable the Smart Grid interventions such as Load management, Renewable Energy integration, Operational efficiency improvement, Consumer service improvement; Smart Cities require clean and continuous supply of power and for this there is a need to develop alternative energy sources to make the cities financially and ecologically viable. Smart cities depend on non-renewable resources for generating power, promote mixed use developments to encourage walkability and reduce wastage of resources. Efficient energy management though smart grids and smart metering are an important feature.

Sanitation, including solid waste management: Waste management typically includes monitoring, collection, transport, processing, recycling and disposal of waste. Smart waste management systems reduce waste and categorize the type of waste at the source, and develop methods for the proper handling of waste. Such systems may be used to convert waste into a resource and create closed-loop economies.

Smart Urban Mobility: Smart mobility is best described as approaches that reduce congestion and foster faster, greener and cheaper transportation options. Most smart mobility systems use data collected from a variety of sources about mobility patterns in order to help optimize traffic conditions in a holistic manner.

Technology: smart cities require technology advancements that can support the overall objective of the initiative. Promoting innovations in technology and providing skilled human capital that can create, engage and sustain the future cities will be an integral element.

Health: Smart city includes Smart health-care management, which converts health-related data into clinical and business insights, which include digital health records, home health services and remote diagnoses, treatment and patient monitoring systems. It also facilitates the provision of health care using intelligent and networked technologies that help monitor the health conditions of citizens.

Creating walkable localities: reduce congestion, air pollution and resource depletion, boost local economy, promote interactions and ensure security. The road network is created or refurbished not only for vehicles and public transport, but also for pedestrians and cyclists, and necessary administrative services are offered within walking or cycling distance.

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Preserving and developing open spaces: parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens, reduce the urban heat effects in Areas and generally promote eco-balance.
Making governance citizen-friendly and cost effective: increasingly rely on online services to bring about accountability and transparency, especially using mobiles to reduce cost of services and providing services without having to go to municipal offices.
Affordable housing, especially for the poor, Sustainable environment, Safety and security of citizens, particularly women, children and the elderly.

SOCIO-ECONOMIC CHALLENGES OF SMART CITIES MISSION

Development of smart city is not an easy task it involves multiple socio-economic challenges. Those challenges have been explained as bellow.
Financing: Finance is the key for the setting up of a smart city. The High Power Expert Committee (HPEC) on Investment Estimates in Urban Infrastructure has assessed a per-capita investment cost (PCIC) of Rs 43,386 for a 20-year period. Using an average figure of 1 million people in each of the 100 smart cities, the total estimate of investment requirements for the smart city comes to Rs 7 lakh crore over 20 years (with an annual escalation of 10 per cent from 2009-20 to 2014-15).
Technology: In the Indian context, control of infrastructure and resources is envisaging huge investments in technology. Whilst the investment is a small percentage of the overall infrastructure, all this investment is being done with a horizon of between 5-10 years and technology leapfrogs quicker than that. For example, we have quickly moved from 2G to 3G and on to 4G, from a wired world to a wireless world and from cables to optical fibers. Most ULBs(Urban Local Bodies) have limited technical capacity to ensure timely and cost-effective implementation and subsequent operations and maintenance owing to limited recruitment over a number of years along with inability of the ULBs to attract best of talent at market competitive compensation rates. Technology evolves faster than a city, and there must therefore be options to adapt as technology changes or gets obsolete.
Urban Mobility: Urban Mobility will be one of the toughest challenges for cities around the globe. In many cities, existing mobility systems are already inadequate, yet urbanisation and increasing populations will increase demand still further. Cities have traditionally sought to solve such challenges by adding new capacity to match demand. However, a capacity-building approach alone is neither efficient nor sustainable. A smart city encompasses many dimensions, and a reliable, affordable, and sustainable transport system is at its core. Along with public transport systems, development of last-mile connectivity is necessary for optimal utilisation of mass transit systems. India's public transport has not been adequate because of the high density of population, poor urban planning and zoning, and also lack of investment. As we build new cities, public transport must be the key focus. A new city's mobility system must be integrated with the regional transport system and may need augmentation of existing regional infrastructure.
Water Management: Water systems are often overlooked yet are critical components of energy management in smart cities, typically comprising 50 percent of a city's total energy spend. The water cycle (water resource, production, distribution, consumption, collection, and treatment of waste water) plays an integral part of smart city. Water and its sustainability are of key importance in smart cities, which must aim to be water neutral or positive as much as possible. One of a city's most important pieces of critical infrastructure is its water system. With populations in cities growing, it is inevitable that water consumption will grow as well. The term "smart water" points to water and wastewater infrastructure that ensures this precious resource - and the energy used to transport it - is managed effectively. A smart water system is designed to gather meaningful and actionable data about the flow, pressure and distribution of a city's water. Further, it is critical that that the consumption and forecasting of water use is accurate.
Waste Management: Due to increase in population along with rapid urbanisation, India is facing a massive challenge in waste management. More than 377 million urban people live in 7, 935 cities and towns and generate around 62 million tonnes of municipal solid wastes per year. But from them only 43 million tonnes (MT) is collected, 31 MT is dumped in landfill sites and rest 11.9 MT is sent for treatment. So, you can imagine the challenge the country is facing to maintain cleanliness in the cities. Sustainability in solid waste

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management calls for a new approach to solid waste and converting it as a resource. There is a need for solid waste management through smart solutions for clean roads and a healthy environment. Unfortunately, India has just not woken up to this. Cleanliness and hygiene call for a baseline cultural change. Technology could help however, the upfront investment in some of these technologies or the minimum scale investment is high. Nevertheless, it is imperative that this be planned for.

Social Infrastructure: A city needs social infrastructure for making it habitable, and most of this social infrastructure needs a critical mass of population and consumption to be viable. This means that in the initial years, participation of private enterprises would be limited. It also means that to start a new Greenfield city, either the projects need to be funded by the promoting government or subsidized. City planners need to plan accordingly.

Employment Generators: It is important to plan along with the government on job creation in smart cities. A critical focus on job creation is not only on the primary economic jobs created, but on service jobs. The city has to be serviced by people working on the support infrastructure.

Rental Housing: There is considerable need to develop a rental housing market to ensure that more people can move in and work in a smart city without needing to buy properties there. The real estate laws for a smart city must be such that investors will come in and provide rental residences to people who move in to stay there. Affordable housing shortage continues to be a major concern in the country today, and can be correlated with the rate of urbanisation taking place. According to the Census of India 2011, India's urban population increased to 377 million, reflecting the rise in urbanisation from 27.8% to 31.2% between 2001 and 2011. This rate of urbanisation has led to many issues such as land shortage, housing shortfall, severe pressure on available infrastructure

Phasing: A Greenfield smart city must necessarily be built in phases on the basis of real demand, and demand should drive investments beyond the basics. Otherwise, we will wind up with ghost cities where infrastructure has been built, but with no takers.

Maintenance: Building a Greenfield city is relatively easy however; it is continuous maintenance which differentiates a great city from the rest. Smart cities should be easy to maintain and be taken care of to extend, modify and accommodate the growing needs of citizens. Smart cities need to be smart for the long haul, not only at the outset.

LEGAL CHALLENGES

One should always bear in mind that smart city will be shaped not only by the new possibilities offered by technology, but also by the new risks and threats to security of individuals and organizations (including the governments themselves). The threats range from risks of data security and privacy, system intrusion, cyber-crime attacks, e-transaction process manipulations, and so on and so forth. Legal challenges of smart city are as follows.

DATA AND CYBER SECURITY

The Information Technology Act 2000 governs the scope of internet activity in India. The Act was implemented to provide legal recognition to electronic transactions, validate digital contracts and regulate online services. Perhaps the most significant areas of concern relate to the ownership, processing, use and security of data generated by smart city infrastructure. Data concerning individual location, activities and even intimate personal information will be gathered and stored. Mapping data flows across smart cities would be an essential element of any privacy impact assessments, and would represent a substantial challenge – not least because of the potential for cloud infrastructure to be located anywhere in the world. Smart cities also give rise to significant issues relating to consent to the capture and processing of data, prompting some commentators to argue either for some form of generalised "pre-consent" or even for a radical move away from consent as a basis for data collection and processing. Arguably, the more reliant governments and municipal authorities become on private sector funding for innovation, the greater the likelihood of accepting reduced protection for data subjects.

The development of smart cities will witness different entities dealing with networks, designs, software, manufacturing of devices, etc. There will also be a surge in "Big Data" i.e., enormous sets of unstructured data

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analysed computationally to understand patterns relating to human behavior. Currently, the term "data" under the Act is defined as representation of information, knowledge, facts, concepts or instructions being prepared in a formal manner and processed in a computer system. Clearly, the definition does not consider the implications of Big Data which comprises of varied sets of data which will be stored and processed by government(s), private organisations and individuals.

The rise in Big Data would pose new security challenges relating to personal data and privacy. Further, the term "cyber security", which is defined as protecting information, equipment, devices, computer resource from unauthorised access, disclosure, disruption, modification and destruction must be adaptive to the evolving nature of security risks as the advent of smart cities could lead to criminal activities that are beyond the scope of the current definition. This calls for a reexamination of the current provisions under the Act.

CYBERCRIME

Smart cities will be composed of thousands of interconnected devices. Such a structure is a boon to criminal actors able to create or purchase and subsequently deploy self-propagating malware, variants of which have been known to proliferate across multiple connected networks. These 'worms' could be used to acquire easily commoditised information such as healthcare information, social security numbers and banking credentials, or even to take control of a significant number of systems.

Were attackers able to successfully hijack these systems they could then be used for extremely powerful distributed denial of service (DDoS) attacks or to hold an entire city for ransom in extortion attacks. Ransomware variants could be designed to encrypt and cripple an entire city's grid, with ransom demands likely to be considerable in such a scenario. These tactics could be highly profitable for cybercriminals and represent a natural evolution of trends that we have observed in the current cybercriminal community. Incident response will become increasingly difficult in the case of city-wide compromise. Private sector organisations and municipal authorities will share ownership of systems and the responsibility for their security. Beyond adding legal and financial costs for the private sector, this will create the need for highly complex pre-planned incident response schemes involving multiple parties.

To address the present lacuna of laws to tackle cybercrimes, the government introduced the National Cyber Security Policy, 2013, which recognises cyber space as a critical sector and aims to build security mechanisms at national and sectoral levels. The Policy recommends (a) establishment of a National Critical Information Infrastructure Protection Centre responsible for mandating security practices related to design, acquisition, development and use of information, (b) a nodal agency to coordinate all matters of cyber security, (c) to designate a Chief Information Security Officer, to lead the internal security measures in organizations, (d) encourages collaboration between the government and private sector to enhance open standards for certified IT products, (e) jointly develop a cyber security framework with other countries that recognises the applicability of international law and the UN Charter.

RIGHT OF PRIVACY

The Information technology Act recognises e-governance by providing legal sanctity to digital signatures, electronic service delivery and retention of electronic records. Sharing and exchange of information between government and private parties will be at the core of the smart city Mission. Presently, the Act does not address the risks associated with this and it remains a grey area.

Right to privacy is a constitutional right, yet the Act is inadequate as the provisions are confined to the protection of sensitive personal data under the Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information) Rules, 2011). These Rules regulate private entities and exclude the government from its ambit. The Act and Rules define "personal information" as information relating to a natural person and excludes real-time data i.e., data collected and processed by different applications, to relay information without any delay in timelines.

Smart cities would involve communication among devices with little or no human intervention. Services will be delivered over networks on real-time basis to be used for differing purposes. The current Rules require a body corporate to obtain consent in writing to collect data from the provider of sensitive personal data. Currently,

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India does not have a comprehensive privacy policy governing the conduct of different stake holders engaged in the information technology chain. For example, every website has a policy on privacy incorporated in it, seeking consent of the user for collection and retention of information as well as a separate policy outlining the manner in which the information is intended to be used by the collector.

CONCLUSION

India's smart city program hopes to revolutionize city life and improve the quality of life for India's urban population. Smart City would require smart economy, bright people, smart organization, smart communication, smart engineering, smart transit, fresh environment and bright living. Nevertheless, with mass migration leading to basic problems, like water shortages and overcrowding, the rate at which these cities will be developed will be the key.

Since there are no laws governing smart cities specifically, the government will have to amend current laws to align with the objectives of the smart city program. In time to come, it may be essential to examine the feasibility of developing a comprehensive law on cyber security, privacy, data protection and standardization of equipments. This can be done through amendments in the Act or a new set of rules that address the aforesaid challenges. The success of the foregoing programme will depend on the underlying telecommunication infrastructure which is a capital-intensive industry, requiring strong collaboration between governments and private entities. In this light, it is essential that the legislature and policymakers develop clarity in the present regulations to evoke investor confidence

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