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SMART CITY AND INDIAN PERCEPTIONS OF IT

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Abstract:- ***Everyone nowadays is familiar with the word 'smart' as all entities, objects and institutions, not to speak of human beings, get "smarter"day by day. This move towards "smartness"is most evident in the domain of infrastructure, particularly the transport system and other utilities and assets of infrastructure. Among all these smart entities, a "smart city"is an oft-heard entity with which citizens are quite familiar. And people in India are no exception. In the current article, authors attempt to deliberate on what makes a city 'smart'. This issue is deliberated upon specifically in the context of two chosen Indian cities. First part of the paper discusses a few universal parameters of smart cities with the help of a few successful international examples. In the second part of the paper we present perceptions about 'smartness'of two progressive and aspirational cities, namely Bhubaneswar and Jaipur in India based on a small-scale sample survey of their residents and conclude with some final remarks. The paper is an humble beginning towards exploring aspects, issues and needs of 'smart'cities in the context of Indian cities like Jaipur and Bhubaneswar. It is hoped to spur reflection on the right approach towards 'smartening up'India n cities.***

Key Words: Asset, Utilities, Beautification, Universal Parameters, Smart City, Infrastructure

1. Introduction

What is a smart city after all? If one were to make a word map for the attributes or characteristics tagged with the notion of a 'smart city', it is likely to include mobility, walkability, heritage, waste management, public housing, utilities, e-government, renewable energy projects, infrastructure, healthcare, smart parking, sustainability and innovative transport and communication solutions and similar words related to these aspects, to name a few. But there is no universally accepted definition of a smart city. The concept of smart city is context-specific so that the meaning and interpretation of it may vary depending on the field of interest, the physical region to which the concept is applied and the prior level of development of the region in question. Indeed, each city, or unit of human habitation, is unique in its own way so that the factors which make it to be considered "smart"should and do also differ.
("Smart Cities –Page 3 –Cidco Smart city". Cidco-Smartcity.Niua.Org, 2019, https://cidco-smartcity.niua.org/category/research-page/articles/articles-smart-cities/page/3/.)

2. Research Objective

Research was designed to meet the following specific purposes:

1) To explore some universal parameters of smart city in the international context
2) To assess the implementation progress of the smart city mission in Bhubaneshwar and Jaipur
3) To study perceptions of citizens of Bhubaneshwar and Jaipur regarding notion of smart city and its implementation

3. Methodology

Universal parameters of smart city in the international context were explored though literature survey. Various articles written on smart cities in international and Indian contexts were studied. Besides literature study of relevant books, articles and research papers for background information, exploratory research through physical surveys of completed projects and a survey of citizens via a questionnaire distributed using digital media was also undertaken. In order to

gauge and assess the parameters focused on in implementations of Smart City Mission, two Indian cities under smart city mission, namely Bhubaneswar and Jaipur were selected. These two cities were selected as they are very active in terms of this mission with roughly 60% of projects in Bhubaneswar and 55% of projects having been completed at the time of writing this article and also due to authors'convenience of data collection. Thus, primary data for the current article came from the following sources:

1. Survey of citizens through digital media.
2. Physical survey of completed projects.
3. Personal interview of experts and stakeholders.

Survey using digital media –A survey was done by sharing a questionnaire with people via social media includingWhatsApp, Facebook, Instagram and Twitter. Through a snowballing technique, we attempted to reach out to citizens of diverse professional backgrounds (designers, architects, doctors, professors, management and business experts, lawyers, engineers and students) of Jaipur and Bhubaneswar. A total of 58 unique and complete responses were obtained at the time of closing the survey to write this article.

Physical Survey of completed projects - Physical surveys were conducted on various projects to assess their physicalprogress and identify the parameters focused on during implementation of those projects.

Personal interviews of experts and stakeholders –Responses from various government and private offices weresought and noted down to understand the work methodology, project details, working approach and need of the cities. Experts and stakeholders including urban designers, architects, management and business experts, people with IT background, lawyers, engineers and academicians etc who were directly or indirectly involved in the projects were contacted and their views on the smart city mission were solicited. For instance, we conducted in-depth interviews of stakeholders and professionals working on the BRTS project in Jaipur and other smart city projects in Bhubaneswar. Overall, we interviewed a total of 15 individuals in selected cities.

4. The Universal Parameters

In the introduction to this paper, we noted that there is no universally accepted definition of a 'smart city'. The 'smart city'connotes different levels of presentability, agility, integration, efficiency and sustainability of amenities, utilities and infrastructure depending upon different contexts –the physical terrain, economic, social and cultural backdrop of the region. Indeed, 'smartness'may be construed as a 'spectrum'along which all aspirational cities are marching. Yet no clear point or line may be drawn to decide when a city may be given the 'smart'designation from being 'non-smart'.

However, in general, a smart city designation is given to a city that incorporates information and communication technologies to a 'considerable'extent. A major aim of a smart city anywhere is to enhance the quality and performance of life from energy to utilities, all in order to make city currently efficient and sustainable for future generation. Literature survey of various articles written on smart cities in international and Indian contexts led to identification of the following 'universal parameters'of smart city:-

a. Smart mobility

b. Smart energy

c. Smart home

d. Smart society

e. Smart care

f. Smart building

g. Big Data

h. IOT

i. Smart Retail

j. Smart Working

k. End user driven Information

l. Smart product Management.

Some of the most successful smart cities recognized internationally include Singapore, Tokyo, Copenhagen, Seoul, Amsterdam and San Francisco. In the remainder of this section we document some major areas and dimensions of 'smartness' that are characteristic of Singapore, Tokyo, and Copenhagen which are among the top smart cities of the world –

Singapore –Since 2017 Singapore has been the top scorer in several international accounts and surveys of smart cities.Sustainable development is one of the all-time goals Singapore has been working on. Some factors and parameters which make Singapore the smartest city in the world are as follows:

- Smart Mobility refers to the possibility of combining multiple options of commuting to go from point A to B faster and at a lower cost. Singapore is also focusing on driverless taxis.

- Safety - Singapore lists number two among the safest places in the world after Tokyo in the safe cities index 2017.

- Health Care - Singapore focuses on addressing healthcare service provision for elderly citizens through a range of technologies, including digital service platforms as well as remote monitoring devices.

- Smart administration - The Singapore Government has some strategic national proj**ects,** which include National Digital Identity portal Sing Pass and the adoption of Pay Now which makes e-payments more integrated and interoperable. They have also undertaken an ambitious project named, Virtual Singapore**.** It allows scientists and urban planners to conduct experiments and run simulations through a data-rich, 3D model of Singapore at the touch of a button.

Tokyo –The capital of the East Asian country Japan, Tokyo with a population of over 13 million is one of the top smartcities. Sustainability and the green initiative are the two prime pillars which make Tokyo smart. The parameters which it has been working upon are –

- Energy efficiency –Policies including high efficiency systems, infrastructure improvements and converting to green infrastructure and several energy efficient initiatives are some of the parameters set to achieve the goals of combating future climate changes, adverse effects of the environment and ever increasing population.

- Public transport and Smart parking –Tokyo is one of the most densely populated cities in the world. And public transport plays a key role in the smooth running of the city.

- Eco friendliness –Tokyo had already achieved a goal of planting one million trees by 2015 and has been given a tag of 'Green Island'. And it will in due course of time become one of the most ecofriendly metropolis of tomorrow by meeting all the sustainable and environmental friendly initiatives like "zero-emission Island, "zero-energy building", to name a few that are being worked upon.

Copenhagen –Copenhagen, the capital city of Denmark, a Scandinavian country which is often cited as one of thehappiest countries to live also fulfills the requirement of a 'smart city'.

- Mobility and Traffic –Copenhagen has been working upon efficient, integrated and green transport. Mobility is a priority and the target is for 75% of all trips to be on foot, by bike or by public transport. In order to achieve this target public transport users, pedestrians and cyclists are promoted by all means.

- Public Transport –Expansion of metro lines is one of the major targets to be achieved by 2019.

- Innovation and digitalization –Copenhagen is one of those cities which integrated technology with the city in various innovative and new ways or modified old ways into new technologies. Copenhagen is well on its way to becoming a large scale Internet of Everything (IoE) innovation lab by seeking and integrating new technologies & solutions.

- Environmental sustainability –Innovative renewable energy projects are one of the most thoughtful projects of Copenhagen. Copenhagen aims to become the world's first carbon-neutral capital by 2025, and Denmark as a whole is determined to become fully independent of fossil fuels by 2050.

5. Smart Cities In The Indian Context

Indian cities, for instance Ahmedabad, Delhi, Mumbai and Bangalore to name a few, are not already "smart enough"in terms of infrastructure and facilities as per the universal parameters discussed above. So the moot question is

identification of factors which make a city 'smart'in the context of Indian cities. The concept of smart cities does and should differ in case of India compared to other countries.

The Smart City Mission launched by GoI is expected to play an important role in 'smartening'Indian cities, improving their capacity and also that of the whole region. It's supposed to serve as a center of all sports, cultural and economic activities of a city. In India, for smart city mission first 20 cities were selected which had initial potential or capacity to become a smart city. According to the proposal of smart city introduced initially various parameters defining a 'smart city'have been in place. However, the current researchers through physical surveys of completed projects and personal interviews of stakeholders in the chosen cities of Bhubaneswar and Jaipur attempted to know the parameters being worked upon in practice as reflected in the choice and implementation of smart city-related projects. The subsequent paragraphs in this section summarize the findings.

Bhubaneswar is a heritage city which is known for its cultural and climatic value. Bhubaneswar city has been planned with a grid road system designed by German architect '*Otto Koenegsberger'* with the consideration of topography and need of city. Several flyovers have been constructed in the city under smart city mission for solving the congestion problem and traffic issues. However, critics say, this rapid construction activity has adverse impact on the climate directly and indirectly. For providing more public transport options for citizens, Government has started more than 200 bus routes. However, because of imperfect planning and route selection not in keeping with the needs of different areas, the bus service has been criticized for having had meagre impact in terms of mitigating congestion on one hand and bad climatic effect on the other. Bhubaneswar has many slum areas which remain outside the purview of smart initiatives. New buildings incorporating new materials and technologies with modern parameters are being introduced as a result of which the traditional image of this city known for its heritage and cultural assets is being eroded, some critics said.

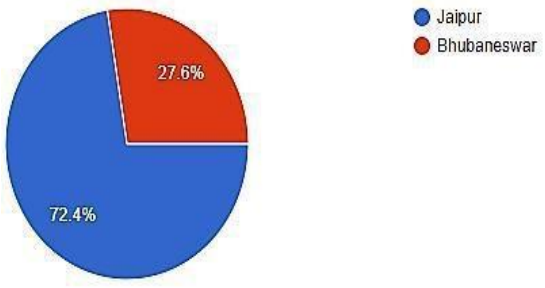
In Jaipur, government seems to be focusing on beautification treatments which can be one of the components of a smart city. The slum areas of Jaipur like Kathputli Nagar are yet to be integrated with the smart city mission. Major projects in progress were found to be tourism-centric and connecting different heritage buildings and tourist spots. Government is focusing on the connectivity of these places with each other through various transport systems like BRTS, MRTS etc. For this purpose, new roads are being laid and modern buildings constructed. However, the availability of electricity and drinking water in the new habitation is constrained, critics point out. Most of the development is taking place in the core city. BRTS system of Jaipur, it is said, has not helped the citizens much due to lack of expert advice and proper planning. In-depth interviews of stakeholders and professionals working on the BRTS project revealed lack of professional approach and advice, improper planning, problems of funding and incompetence of people handling these projects among the reasons of failure.

6. Survey Results & Discussion

A digital survey was performed by preparing a general questionnaire using Google forms. We aspired to reach and seek response from a representative sample of citizens from two selected aspirational smart cities of India, namely, Jaipur and Bhubaneswar with the purpose of knowing and gauging their opinion regarding the smart city concept and their perceptions about its implementation in their particular city. The survey instrument was disseminated through various digital platforms like Whatsapp, Facebook, Instagram and Twitter. At the close of the survey we had obtained 58 unique and complete responses (where 32 of the respondents were male and 26 of them were female. And their age group falls under 27 – 48 years approximately.)

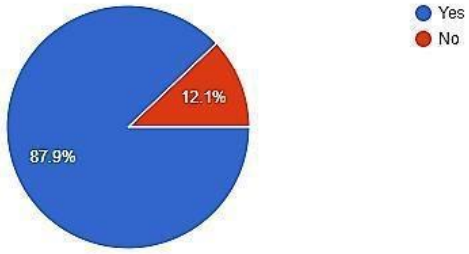
The analysis below is based on these 58 responses finally obtained.

1. Question title: In which City do you live?



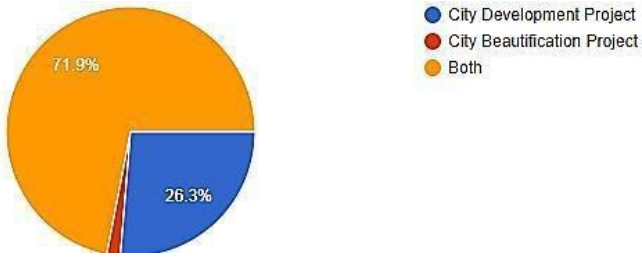
This survey was conducted among citizens of the aforementioned two cities with 72.4% from Jaipur and remaining 27.6% from Bhubaneswar.

2. Question title: Are you aware that smart cities exist in your city?



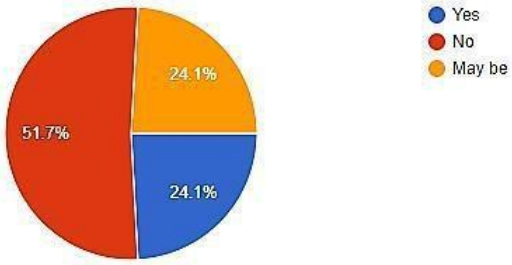
12.1% people are still unaware of the existence of 'smart city'in their respective cities.

3. Question title: What according to you 'Smart city' is?



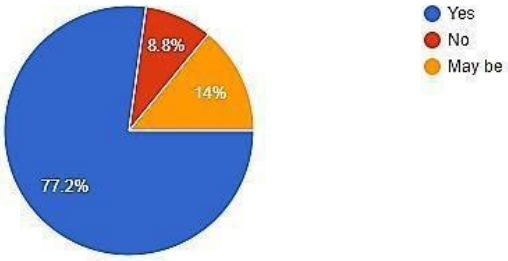
Interestingly, majority of the respondents (about 72%) construed the meaning of 'smart city'projects as including both city development and city beautification projects.

4. Question title: Do you think smart city is an excuse to divert the public's mind from actual problems of the city?



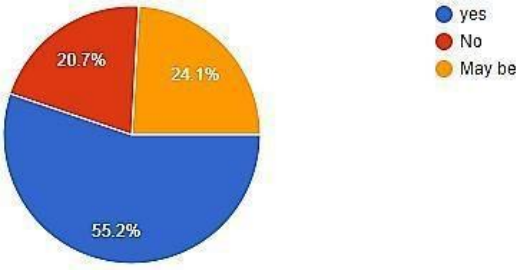
Only 24.1% of respondents thought that smart city is just an excuse to divert citizen's mind from the actual problems of the city.

5. Question title: Do you think that living in a smart city would impact your life?

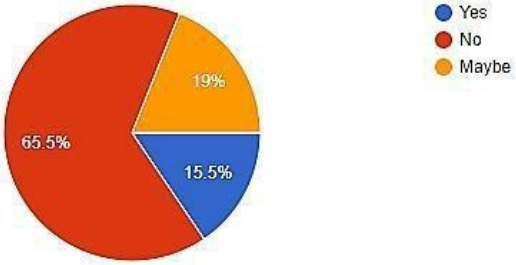


People's expectations from the smart city project seem to be quite high as majority of the respondents believed that their life would be impacted (positively) by the smart city.

6. Question title: Do you think that smart cities are worth the economic cost?

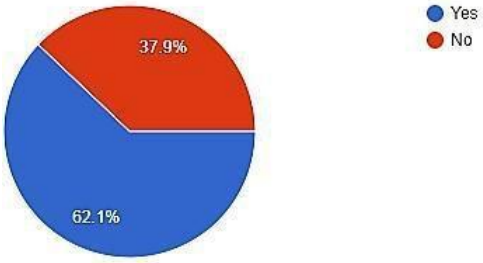


7. Question title: Are you satisfied with the completed smart city projects?



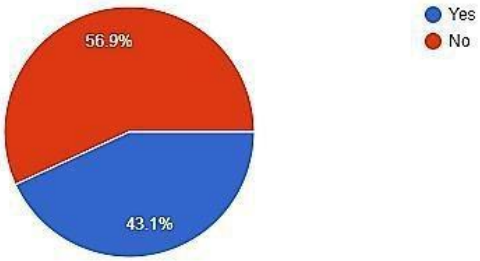
A majority of the respondents (65.6%) are not satisfied with the completed projects. The actual delivery of the projects seems to be far from meeting citizen expectations.

8. Question title: Are you getting 24x7 electricity service at your home?



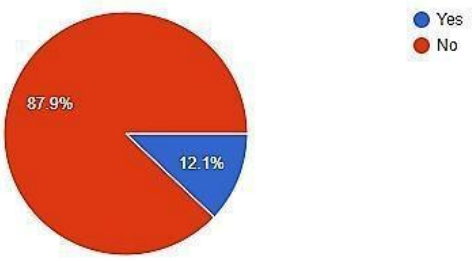
24x7 electricity services at homes is considered one of the parameters of smart city in the Indian context. A majority of the respondents seem satisfied on this front, although questions arise regarding the 37.9% of the sample respondents who responded in the negative. Further investigation of the respondents who said 'no'to this question revealed that they were located in the outskirts of the cities. There is also the issue of selection bias in our sample introduced by the way data was collected only from respondents who had access to and were usual users of digital platforms.

9. Question title: Are you getting 24x7 water supply service at your home?



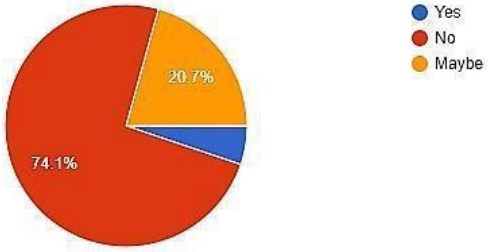
For majority of the respondents in our sample, the water supply service at home is constrained. In view of the fact regarding sample selection bias present in our sample as noted above, the overall situation of availability of water in these cities is far from satisfactory. It is common knowledge that towns and cities in India as elsewhere are facing scarcity of water. Water scarcity is the major, fundamental issue that needs to be resolved on a priority basis for realization of "smart city'in case of Indian cities.

10. Question title: Are you getting 24x7 free internet service?

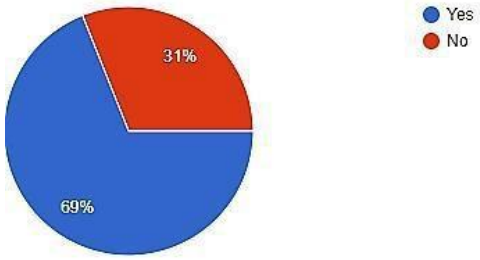


The importance of access to Internet service cannot be over-emphasized for the success of e-services and e-governance as part of the smart city mission. Much rapid work seems to have taken place in this area in recent times. However, much extension is required as revealed by our survey respondents.

11. Question title: Did government of your area take consent from public for projects coming under smart city mission?

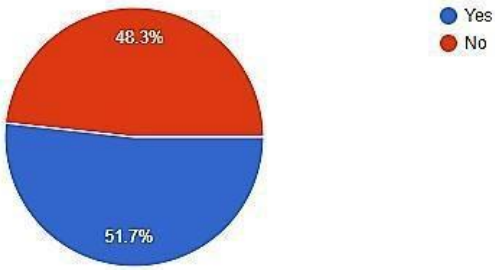


12. Question title: Do you think Smart City Mission has been changed into City Beautification Mission?



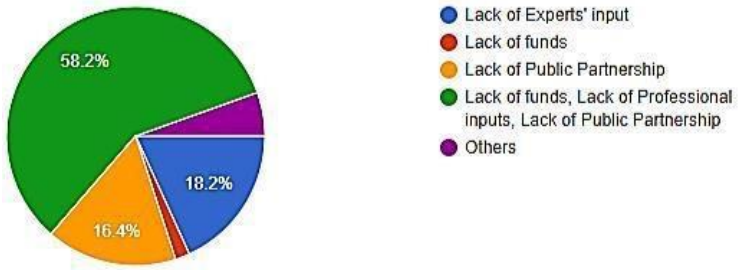
As per our survey result, a majority of respondents (69%) opine that smart city mission has been changed into city beautification.

13. Question title: Do you think smart city mission in India is a failure?



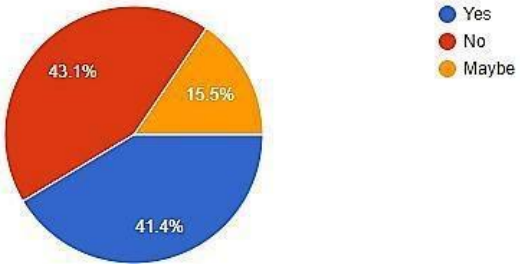
A little over half the respondents (51.7%) in the two cities consider the smart city mission in India to be a failure.

14. Question title: If you consider the smart city mission in India to be a failure, Then what would you attribute its failure to?



58.2% of respondents attributed the perceived failure of smart city mission to all three factors, namely, lack of funds, lack of professional inputs and lack of public partnership.

15. Question title: Do you think that your city is loosing its real identity due to smart city mission?



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CONCLUSION

From the limited, small-scale research reported in this paper one may safely make two concluding remarks. First, discrepancy between the notion of a smart city as initially proposed and the actual implementation of the smart city projects in the two Indian cities under consideration has been found. It seems that beautification projects have taken precedence over projects of fundamental nature aimed at creating and/ or improving civic amenities, communication and infrastructure. Secondly, the universal smart city parameters and the concept of a smart city in the Indian context are quite different. More deliberation and clarity needs to be developed to specify a bare minimum set of criteria of ‘smartness’in our context in view of the smart city implementation gaps in case of Jaipur and Bhubaneshwar noted in this research. The actual tendency to take up simpler, beautification projects and other relatively low-hanging fruits instead of hardcore, infrastructure creation and capacity building projects under the smart city mission in many Indian cities is a core point that citizens and administrators alike need to reflect on.

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