Development Of Smart Cities in India

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INTRODUCTION

More than 50% of the global population resides in cities, and this percentage is expected to increase to 70% by 2050. A smart city is a technologically advanced urban area that employs various electronic methods and sensors to collect specific data. This data is then utilized to efficiently manage properties, resources, and services, thus improving overall operations throughout the city. This includes the gathering and analysis of data from citizens, devices, homes, and assets to manage transportation systems, information systems, power plants, utilities, schools, libraries, hospitals, and other community services. Smart cities are defined as "smart" in terms of both the way their governments utilize technology and how they monitor and govern the city. In smart cities, the sharing of statistics is not restrained to the metropolis itself however additionally includes companies, citizens and different third events that could advantage from diverse makes use of that facts. Sharing records from distinctive structures creates opportunities for improved expertise, monetary advantages.

This concept involves integrating data and communication technology (ICT) and devices connected IoT network to enhance the effectiveness of urban operations and services, and to facilitate connectivity with citizens. Smart city technology allows city officials to interact with the community and city infrastructure, and to monitor the city's progress and changes. ICT is utilized to improve the quality, efficiency, and interactivity of urban services, reduce costs and resource consumption, and enhance communication between citizens and government. A smart city is expected to be more agile in responding to challenges than a traditional city with a purely "transactional" relationship with its residents. However, the term "smart city" is still open to various interpretations due to its ambiguity. Many cities have already implemented smart city technology.

The government of India has launched a nationwide project called the "Smart Cities Project" which focuses on urban renewal and retrofitting to develop sustainable and citizen-friendly smart cities across the country. The initial phase of the project covered 100 cities, and the deadline for completion of the projects was set between 2019 and 2023. Each city is provided with ₹1,000 crore (US$one hundred thirty million) funding to the enterprise for development.

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REVIEW OF LITERATURE

Abdulrahman Alkandariet al., (2012)in“Smart cities: A "Survey" was conducted on several articles, which were classified into two categories: 1) General case studies that provide an overview of the topic of smart cities, and 2) Specific case studies that focus on the detailed application of smart city technologies, such as Traffic Management Systems, Smart Grids, and Wireless Technology. The research findings indicate that information and communication technology (ICT) are applied in various aspects of smart cities, including government facilities, buildings, traffic, electricity, health, water, and transportation

Kunkulol .M.K et al.,(2016) The report "Smart City Development and Progress Indian Scenario" provides an analysis of the potential opportunities for smart cities in India and aims to assist global solution providers in assessing the current situation and supporting the Indian government's smart city initiative. India is considered the most attractive investment destination due to its strong and stable democratic government and the relatively free market forces that are currently in place.

KuldeepSingh et al., (2017) in The study titled "Smart Cities in India: Key Areas and Challenges - Case Study of Chandigarh City" focuses on the concept of smart cities, particularly as it relates to the Indian Government's smart city project which aims to develop 100 smart cities in the country (now reduced to 98 cities). The study also addresses the challenges and key areas for the development of smart cities in India, using the case study of Chandigarh as an example.

NEED FOR THE STUDY

There are numerous reasons why we ought to rework our cities, and make them constantly smarter: our cities are becoming bigger and larger, our trip longer, roads larger and the impact at the environment is worse than it has ever been. To address these demanding situations, we want to appearance up some different cities, which are already succeeding in that domain and replicate the version. It’s becoming a global undertaking as India is dealing with a good sized population increase.

OBJECTIVES

1. To investigate the significance of executing a smart city initiative within the nation.
2. To study the barriers for implementing smart city project
3. To analyse the methods that overcome the barriers for implementing smart city project.

SCOPE OF THE STUDY

India commenced the improvement of these smart metropolis initiatives at the global stage. India has a plan to build at the least a hundred smart cities in India. This concept evolved from individual projects to address urban challenges. Therefore, it's crucial to have a thorough understanding of the options available and how they can address the unique challenges of a given city.

STATEMENT OF THE PROBLEM

The challenge can be to make certain average monetary, social, and environmental sustainability while concurrently presenting these populations with requirements like wholesome food, clean water, and adequate electricity. More than ever, many different organizations will want to work collectively to make cities smarter. If we need smart cities to exist and to continuously flourish, we want neighbourhood authorities to cooperate. Everybody has the power to improve, greener and smarter their metropolis. It doesn't have to be a significant adjustment to the routine.

RESEARCH METHODOLOGY

Research is the methodical examination of a specific issue using scientific techniques. Earl Robert Babbie, an American sociologist, defines research as a structured investigation aimed at describing, explaining, predicting, and controlling observed phenomena, involving both inductive and deductive approaches.

RESEARCH DESIGN

Research design is the arrangement for data collection and analysis in a way that helps to combine relevance to the studies reason with economic system in manner. Studies layout specifies the general approach, equipment and techniques had been used to gather facts wished and specifies the assets that used for collection of statistics and the processes used. In this paper, Descriptive kind of studies this is used to describe the characteristics of a population. It collects information that are used to answer a wide range of what, when and how questions concerning a specific population or group.

DATA COLLECTION

Data is defined as the information about something that is transformed in a form to efficiently move it from one place to another. Types of data are collected in this research are

- Primary data
- Secondary data
- **Primary data**

  It refers to the data or information that is directly collected from the focus target of the research. Primary data has more value than secondary data in research. Primary data is mostly true to the knowledge of the researcher.
- **Secondary data**

  Secondary data is defined as the data collected from various sources such as journals, articles and e-books. Secondary data are the data or information or facts which are already collected for a purpose. Secondary data need not necessarily to be true always.

RESEARCH INSTRUMENTS

The questionnaire was framed on the basis of objectives and distributed to people of urban, semi urban and rural and the responses were collected The creation of a questionnaire involves developing the structure and inquiry content in a survey tool for gathering information on a specific occurrence.

SAMPLING TECHNIQUES

Sampling is a method used to select a group or subset of individuals from a larger population to draw statistical inferences and estimate characteristics of the whole population. Probability sampling techniques involve random selection, allowing for sturdy statistical inferences about the entire cluster. Non-random selection based on convenience or other criteria, making data collection more straightforward. In this study, we utilized convenience sampling, which involves selecting individuals who are most easily available to the researcher.

SIZE

The number of respondents depends on factors, including the size and variability of the population. In this study sample size is 53 number of the respondents.

ANALYSIS TOOL

SPSS is software for editing and analysing data.

LIMITATIONS OF THE STUDY

- To the particular area due to time constraint.
- The sample size is restricted to 53
- The respondents view and opinion may hold good for time being and may vary in future.

DATA ANALYSIS AND INTERPRETATION

PERCENTAGE ANALYSIS

Table Showing Demographic factors of the Respondents

S. No	FACTORS	PARTICULARS	FRE	%
1	**Gender**	Male	1	1.9
		Female	26	49.1
		Transgender	26	49.0
		Total	**53**	**100**
2	**Age**	21-30	30	56.6
		31-40	14	26.4
		41-50	6	11.3
		Above 50	3	5.7
		Total	**53**	**100**
3	**Marital Status**	Single	33	62.3
		Married	20	37.7
		Total	**53**	**100**
4	**Residing Area**	Urban	36	67.9
		Semi-Urban	11	20.8
		Rural	6	11.3
		Total	**53**	**100**
5	**Occupation**	Employed	27	50.9
		Self-Employed	16	30.2
		Unemployed	3	5.7
		Student	6	11.3
		Retired	1	1.9
		Total	**53**	**100**

Table – Importance of smart city project in the country

S. No	Particulars	Not Important	Less important	Moderately Important	Important	Very important	Frequency	Percentage
1	Open Data	17	4	8	12	12	53	100
2	Smart payment and finance	5	13	6	17	12	53	100

3	Public health	10	6	14	11	12	53	100
4	Advanced health	8	11	9	17	8	53	100
5	Waste Management	9	11	6	19	8	53	100
6	Waste and Waste Water	9	12	7	18	7	53	100
7	Transportation	9	6	11	17	10	53	100
8	Telecommunication	8	9	9	16	11	53	100
9	Build environment	8	8	7	19	11	53	100

Table Showing how committed is your city to the smart city concept

S.No	Particulars	Frequency	Percentage
1	Very well committed	12	22.6
2	Fairly Committed	16	30.2
3	Would like to commit	11	20.8
4	Not wish to commit at the present time	14	26.4
	Total	53	100

Table – allocation of fund

S.No	Particulars	Frequency	Percentage
1	Yes	29	54.7
2	No	11	20.8
3	I don't Know	13	24.5
	Total	53	100

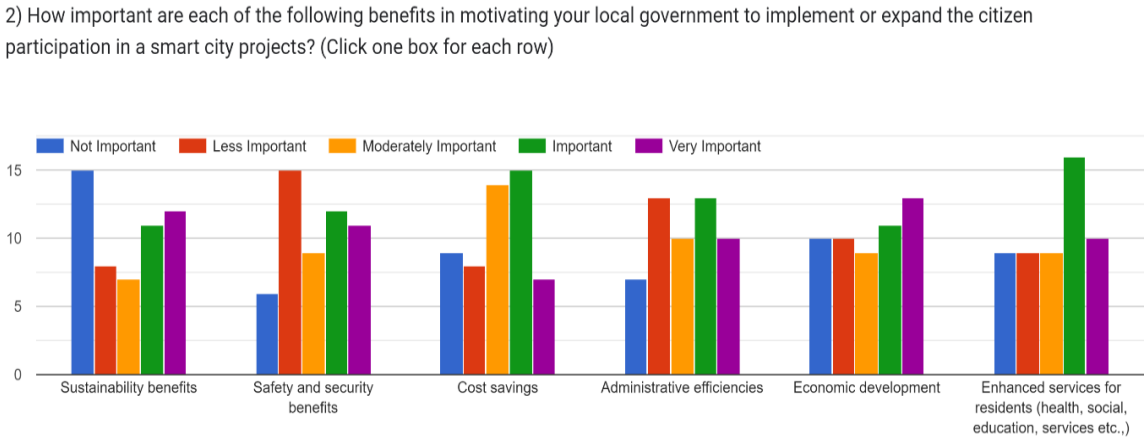
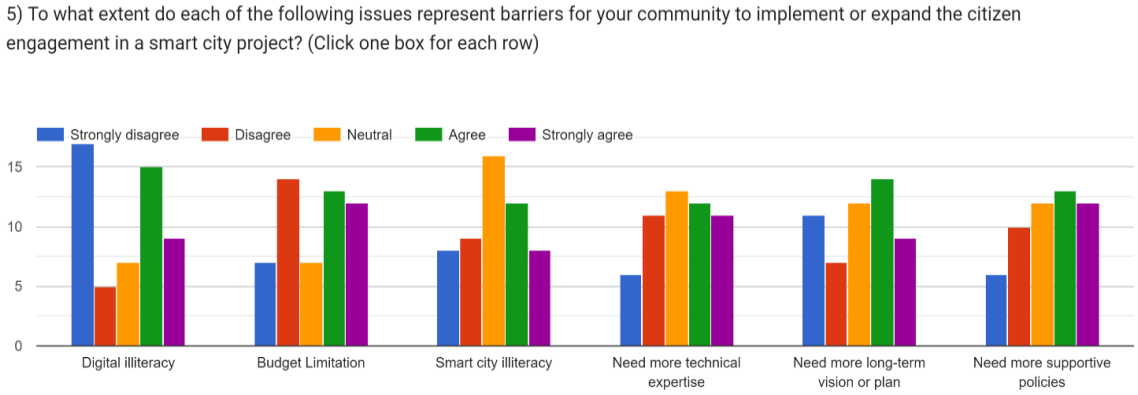


Chart showing the barriers to implement this project



CHI SQUARE

To test the association between residing area to the smart city concept

H0: There is no association between residing area and how the city is committed to smart city concept

H1: There is an association between residing area and how city is committed to the smart city concept

Table showing testing association between residing area city

	Residing area	How city is committed to the smart city concept
Chi Square	29.245	2.321
Df	2	3
Asymp. Sig.	0.000	0.509

Interpretation

From the table it is inferred that table value is greater than significant value. H0 is accepted and H1 is rejected. Therefore, there is no association between residing area and how city is committed to the smart city concept.

FINDINGS

- 49.1% - respondents were female
- 56.6% - respondents are in age grouped between 21-30
- 62.3% of the respondents have marital status as single
- 67.9% of the respondents have their residing area as Urban
- 50.9% of the respondents are employed
- 32.07% of the respondents responded open data is not important for smart city project
- 32.07% of the respondents responded smart payments and finance are important for smart city projects
- 32.55% of the respondents responded public safety is moderately important for smart city projects
- 32.07% of the respondents responded advanced health is significant for smart city projects
- 35.84% of the respondents responded waste management is important for smart city projects

- 33.96%of the respondents responded water and waste water management is needed for smart city projects
- 32.07% of the respondents responded transportation is having high impact for smart city projects
- 30.2% of the respondents agree that their city is fairly committed to the smart city projects.
- 54.7% of the respondents agree that they know how much amount their local government spent for civil engagement in the smart city project.
- 28.30% of the respondents responded that sustainability benefit will motivate local government to implement smart city projects.
- 28.30% of the respondents responded that safety and security benefit will motivate local government to implement smart city projects.
- 28.30% of the respondents responded that cost savings will motivate local government to implement smart city projects.
- 28.30% of the respondents responded that administrative efficiencies will motivate local government to implement smart city projects.
- 24.52% of the respondents responded that economic development will motivate local government to implement smart city projects.
- 30.18% of the respondents responded that enhanced services for residents will motivate local government to implement smart city projects.
- 32.07% of the respondents agree that digital illiteracy is the barrier for smart city projects
- 26.41% of the respondents agree that budget limitation is the barrier for smart city projects
- 30.18% of the respondents agree that smart city illiteracy is the barrier for smart city projects
- 24.52% of the respondents agree that need more technical expertise is the barrier for smart city projects
- 26.41% of the respondents agree that need more long-term vision or plan is the barrier for smart city projects
- 24.52% of the respondents agree that need more supportive barriers is the barrier for smart city projects
- There is no association between residing area and how city is committed to the smart city concept.

SUGGESTIONS

- The government can spark a revolution in electric and networked transport.
- The expenditure for electricity should be controlled
- The government should develop smart health care system
- Data must be open and transparent, i.e. **they must be available and within the reach of any citizen.**
- **The education system should be programmed and smart**
- **The waste management should be managed and maintained properly**

CONCLUSION

Smart cities are not just about cutting-edge technology; they are also about using those tools correctly and creatively. This is the most crucial component or foundation of a smart city. Many nations have worked on this and are seeing improvements in their cities and residents' quality of life. Some cities have installed intelligent traffic devices, such as sensors on the traffic lights that display the current weather conditions to drivers and alert them to any rain or adverse weather forecasts. Then there are intelligent parking devices, which assist the driver in parking the car more securely and automatically charges the amount if they cause any damage.

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