Public Perception Towards Smart City Facilities

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Abstract **– This study examines public perception towards smart city facilities in Coimbatore, focusing on citizens' awareness, satisfaction, and evaluation of various urban services. Primary data were collected from 665 respondents using a structured questionnaire, and analyzed through simple percentage analysis and weighted average ranking. The findings indicate that respondents perceive improved healthcare access, enhanced public transport, and better water conservation as the most significant benefits of smart city initiatives. Moderate satisfaction is observed for education quality, public safety, sanitation, and overall quality of life, while lower perception is noted for e-governance, investment attraction, and utilization of idle urban spaces. The study underscores the importance of aligning smart city projects with citizens' priorities and highlights areas requiring greater attention to ensure inclusive, sustainable, and effective urban development.**

Keywords: Smart city, Public perception, Service quality, Urban infrastructure, Citizen satisfaction

I. INTRODUCTION AND BACKGROUND

Indian cities are experiencing continuous transformation as they strive to meet growing expectations for improved infrastructure, efficient public services, environmental sustainability, and transparent governance. Urban administrations are increasingly required to deliver reliable transportation systems, effective sanitation, accessible healthcare and education, enhanced public safety, and sustainable resource management. In this context, the Government of India launched the Smart Cities Mission to promote planned urban development through the adoption of digital technologies, data-driven decision-making, and innovative governance practices. The mission seeks to create cities that are not only technologically advanced but also inclusive, sustainable, and responsive to citizen needs.

Smart city facilities focus on improving service quality across multiple dimensions, including reduced traffic congestion, ease of parking, enhanced public transportation, optimized utility distribution, and improved sanitation facilities. Emphasis is also placed on strengthening social infrastructure such as healthcare access and education quality, along with environmental initiatives aimed at improving air quality, water conservation, and the expansion of green spaces. Governance reforms through e-governance platforms, faster emergency response systems, and enhanced security measures are intended to increase administrative efficiency and public trust. Additionally, smart city initiatives are expected to stimulate economic development by attracting investments, generating employment opportunities, supporting small and medium enterprises, and boosting tourism.

Understanding public perception towards these facilities is essential, as citizens' satisfaction and experiences reflect the actual effectiveness of smart city interventions. Public opinion provides valuable feedback on whether smart city initiatives have improved infrastructure conditions, service accessibility, environmental quality, and overall quality of life. Therefore, this study examines public perception towards smart city facilities to assess their impact on urban services, governance effectiveness, environmental sustainability, and socio-economic development, thereby offering insights for policy improvement and future urban planning strategies.

II. STATEMENT OF THE PROBLEM

The implementation of smart city initiatives aims to enhance urban infrastructure, service delivery, governance efficiency, and overall quality of life; however, there is insufficient empirical evidence on how these facilities are perceived by the general public. In several cities, smart technologies and infrastructure projects are introduced without systematically assessing citizens' awareness,

satisfaction, and level of trust in their effectiveness. This creates a possible gap between the intended objectives of smart city programs and the actual experiences of residents in areas such as transportation systems, sanitation services, healthcare access, environmental quality, e-governance, public safety, and economic development. The lack of comprehensive evaluation of public perception may result in underutilization of facilities, ineffective policy decisions, and limited public engagement. Variations in perceptions related to service quality, sustainability initiatives, and socio-economic benefits often remain unidentified. Therefore, examining public perception towards smart city facilities is essential to identify key challenges and improvement areas, ensuring citizen-focused and sustainable urban development.

III. SCOPE OF THE STUDY

The scope of the study is limited to examining public perception towards smart city facilities among selected urban residents using primary data collected from 665 respondents. The study focuses on key dimensions such as service quality, transportation facilities, utility distribution, sanitation, healthcare, education, environmental sustainability, e-governance, public safety, and socio-economic development. It evaluates perceptions related to infrastructure improvement, quality of life, trust in government, employment generation, SME growth, and tourism development. The analysis is confined to descriptive statistical tools, namely simple percentage analysis and weighted average ranking, to understand the level and priority of public perception. The findings reflect respondents' opinions at a specific point in time and may vary across regions and over periods. The study provides insights for policymakers and urban planners to enhance citizen-centric smart city initiatives.

IV. REVIEW IF LITERATURE

International research underscores that citizen happiness and meaningful public involvement serve as foundational pillars for the sustainable success of smart city initiatives globally. Van Twist, Ruijer, and Meijer (2023) differentiate between active discontent-where citizens vocally resist smart technologies and governance and passive discontent, which manifests through unvoiced dissatisfaction stemming from low awareness and inadequate feedback mechanisms, highlighting the imperative for responsive governance and enhanced communication strategies. In Singapore, studies reveal that public trust hinges on transparent data governance, institutional accountability, and participatory frameworks that safeguard privacy while promoting open information access, balancing technological advancement with citizen-centric priorities. Comparative analyses across Brazil, the UK, and the Netherlands demonstrate evolving citizen roles-from contestation and acceptance to co-creation-shaped by diverse governance models, rather than fixed responses to smart city deployments. Spain's Smart Santander initiative exemplifies how extensive sensor networks, coupled with proactive benefit communication, bolster public support, especially for environmental enhancements and branding as an innovative urban hub. However, Silva et al. and related reviews note that many digital platforms function primarily as informational tools, falling short of integrating deliberative participation for sustained citizen engagement in urban decision-making.

Wirtz, Becker, and Schmidt (2022) emphasize that citizens prioritize immediate, tangible smart services-like optimized transportation, streamlined e-administration, and accessible social support-over abstract long-term innovations, aligning with perceptions of service quality, mobility, and emergency response in urban contexts. The Capgemini Research Institute indicates that while 58% of global citizens view smart cities as sustainable, 63% prioritize data privacy over service improvements, exposing a core tension between efficiency gains and privacy safeguards. UN-Habitat's people-centered guidelines advocate for inclusion, human rights, and multi-level governance over technology-centric models, as evidenced in Hong Kong where high-tech infrastructure alone fails to secure support amid transparency, participation, and trust deficits. Collectively, these international studies affirm that smart technologies yield transformative urban value only when integrated with transparent communication, robust data protection, inclusive participation, and trust-enhancing governance, directly informing perception variables like e-governance, security, and quality of life in initiatives such as Coimbatore's smart city framework.

OBJECTIVE OF THE STUDY

To ascertain public perception towards smart city facilities

V. SIGNIFICANCE OF THE STUDY

The significance of the study lies in its contribution to understanding citizens' perceptions of smart city facilities and their effectiveness in improving urban living conditions. By capturing public opinions on service quality, infrastructure development, governance efficiency, environmental sustainability, and economic opportunities, the study provides valuable insights for policymakers, urban planners, and local authorities. It helps identify areas where smart city initiatives are performing well and highlights sectors requiring improvement or increased public engagement. The findings support evidence-based decision-making by aligning smart city policies with citizens' expectations and needs. Additionally, the study enhances academic literature on smart city evaluation by emphasizing the role of public perception as a key success indicator. Overall, the study aids in promoting more inclusive, responsive, and sustainable smart city development.

VI. RESEARCH METHODOLOGY

Source of Data

The present study is based entirely on primary data collected directly from the general public through a structured questionnaire. The survey method was adopted to obtain first-hand and reliable information on public perception towards smart city facilities. The structured questionnaire ensured uniformity in the questions administered to all respondents, thereby enabling consistency and comparability of responses. This approach enhanced the reliability and validity of the data collected and facilitated a systematic assessment of citizens' views on various smart city services and facilities.

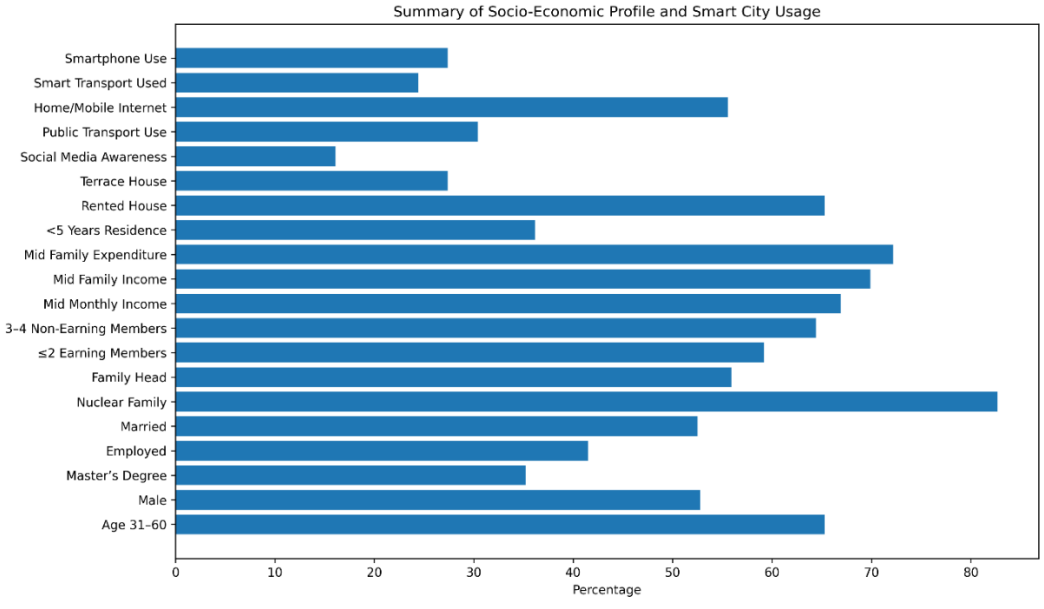
Sampling Technique and Sample Size

The study employed a convenience sampling technique to select respondents from Coimbatore city. A total of 665 respondents were included in the survey. Convenience sampling was adopted due to its practical feasibility and ease of reaching respondents who were willing to participate. However, it is acknowledged that this non-probability sampling method may restrict the generalization of findings beyond the selected study area.

Framework of Analysis

The data collected were analyzed using descriptive statistical tools. Simple percentage analysis was used to examine the demographic profile of respondents and to assess the overall level of public perception towards smart city facilities. The weighted average ranking method was applied to identify and rank key smart city services based on public preference and perceived effectiveness. This analytical framework enabled a clear understanding of priority areas influencing public satisfaction and quality of life within the smart city context.

VII. ANALYSIS AND INTERPRETATION



INTERPRETATION

The consolidated chart presents a comprehensive overview of the dominant socio-economic characteristics of the respondents. The majority of respondents belong to the economically active age group of 31–60 years, with a slight male predominance. A substantial proportion of respondents possess higher educational qualifications, particularly master's degrees, and are predominantly employed, indicating a relatively educated and working population. Most respondents are married, belong to nuclear families, and act as heads of their households, with up to two earning members and three to four non-earning members in the family. Income and expenditure patterns largely fall within the middle-income range, reflecting financial stability. A majority reside in rented and terrace houses and have lived in the city for less than five years. Social media emerges as a key source of smart city awareness, while public transportation is the most commonly used commuting mode. Internet access is mainly through home broadband and mobile devices, with smartphones being the most frequently used digital device, indicating readiness for smart city service adoption.

WEIGHTED AVERAGE RANKING – PUBLIC PERCEPTION TOWARDS SMART CITY FACILITIES

S.No	Perception	SA	A	N	DA	SDA	Total	Mean Score	Rank
		5	4	3	2	1			
1	Reduced traffic congestion	11	303	138	56	157	665	2.9323	9
		55	1212	414	112	157	1950		
2	Improved healthcare access	34	302	162	26	141	665	3.0932	1
		170	1208	486	52	141	2057		
3	Boosted tourism	5	328	50	34	248	665	2.7113	19
		25	1312	150	68	248	1803		
4	Enhanced public transit/Better public transport facilities	30	306	164	25	140	665	3.0917	2
		150	1224	492	50	140	2056		
5	Improved air quality	16	295	90	90	174	665	2.8331	13
		80	1180	270	180	174	1884		
6	Attract investments for establishing companies/society development	60	200	65	32	308	665	2.5068	18
		300	800	195	64	308	1667		
7	Supported SME growth	17	270	136	64	178	665	2.8256	14
		85	1080	408	128	178	1879		
8	E Governances	22	240	90	63	250	665	2.5805	17
		110	960	270	126	250	1716		
9	Better water conservation	10	331	125	99	100	665	3.0782	3
		50	1324	375	198	100	2047		
10	Enhanced education quality	4	330	136	42	153	665	2.9850	5
		20	1320	408	84	153	1985		
11	Increased security	10	331	125	64	135	665	3.0256	4
		50	1324	375	128	135	2012		
12	Facilities better utilization of empty/Idle space	22	249	81	60	253	665	2.5895	16
		110	996	243	120	253	1722		
13	Faster emergency	16	295	98	82	174	665	2.8451	12

	response from government officers	80	1180	294	164	174	1892		
14	Better quality of life	12	308	126	94	125	665	2.9820	6
		60	1232	378	188	125	1983		
15	Better sanitation facility	17	317	100	80	151	665	2.9534	7
		85	1268	300	160	151	1964		
16	Ease parking facility	12	308	126	54	165	665	2.9218	10
		60	1232	378	108	165	1943		
17	Generated more job opportunities	19	292	90	80	184	665	2.8226	15
		95	1168	270	160	184	1877		
18	Optimized utility distribution	17	274	167	62	145	665	2.9338	8
		85	1096	501	124	145	1951		
19	Increased green spaces	9	299	129	68	160	665	2.8932	11
		45	1196	387	136	160	1924		

The result of weighted average rank discloses that, majority of the respondents perceive improved healthcare access as highly significant, followed by enhanced public transit/better public transport facilities and better water conservation. Enhanced education quality, increased security, and better quality of life are moderately perceived, whereas attracting investments for establishing companies/society development, e-governance, and facilities for better utilization of empty/idle space are perceived as less significant.

VIII. SUGGESTIONS

- Strengthen healthcare infrastructure under smart city initiatives by expanding digital health services, improving hospital accessibility, and integrating real-time health monitoring systems to sustain high public satisfaction.
- Enhance public transport systems through increased frequency, better last-mile connectivity, and intelligent traffic management to further reduce congestion and improve commuting efficiency.
- Intensify water conservation measures by adopting smart metering, rainwater harvesting, and leak detection technologies to ensure sustainable water management.
- Improve public awareness and usability of e-governance services through user-friendly platforms, digital literacy programs, and multilingual service access.
- Promote better utilization of idle and vacant urban spaces by converting them into green areas, public utilities, or community centers through smart planning.
- Encourage investment and economic development by creating supportive policies for SMEs, strengthening tourism infrastructure, and improving digital business facilitation systems.

IX. CONCLUSION

The study on public perception towards smart city facilities demonstrates a generally favorable response from urban residents, indicating that smart city initiatives have contributed positively to improving urban services and living conditions. The analysis reveals that respondents assign the highest priority to improved healthcare access, enhanced public transportation, and better water conservation, emphasizing that citizens value initiatives that directly influence daily life, health, and mobility. These findings suggest that investments in core infrastructure and essential public services are widely recognized and appreciated by the public. Moderate levels of satisfaction with education quality, sanitation facilities, public safety, and overall quality of life indicate steady progress in social infrastructure development, though there remains scope for further enhancement. At the same time, lower perception

scores related to e-governance, attraction of investments, utilization of idle or vacant spaces, and broader economic development highlight areas that require greater attention. These aspects may be affected by limited public awareness, complexity in service access, or uneven implementation across locations. The socio-economic characteristics of the respondents show a relatively educated and digitally connected population, suggesting strong potential for improved adoption of smart governance and digital services through targeted awareness programs and simplified platforms. Overall, the study highlights the need for a balanced approach to smart city development that strengthens essential services while simultaneously improving governance efficiency, economic opportunities, and citizen engagement to ensure inclusive, sustainable, and people-oriented urban growth.

X. FUTURE SCOPE

The future scope of the study extends to a deeper and more comprehensive evaluation of smart city initiatives by incorporating comparative analysis across different cities or regions to understand variations in public perception. Further research can employ probability sampling techniques and larger sample sizes to enhance the generalizability of findings. Longitudinal studies may be conducted to assess changes in public perception over time as smart city projects mature and new technologies are introduced. Future studies can also integrate advanced analytical tools such as factor analysis, structural equation modeling, or GIS-based analysis to explore the relationships between smart city facilities, citizen satisfaction, and quality of life. Additionally, qualitative methods such as focus group discussions and in-depth interviews can be used to capture nuanced citizen experiences and expectations. Expanding the scope to include inclusivity, digital divide, and socio-economic disparities will provide richer insights for developing more equitable and citizen-centric smart city policies.

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