

# Tech-led urban transition and citizen participation in civic governance: Case study from an Indian city

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## Abstract

Globally, citizen-centric development has been widely advocated for a just, smart and sustainable transition of urban centers amid the rising urbanization and cities emerging as engines of growth. Against the tech-centric approach, effective citizen participation in urban local governance and development has been stated as the key to reaching that goal. However, scholarly work on urban governance and citizen participation has highlighted the institutional bottlenecks hindering active citizenry. Echoing similar concerns on urban governance, this paper examines the challenges of citizen-centric governance in case of the Indian city of Patna under the national urban scheme of Smart Cities Mission. Launched in 2015, the mission has marked a decade of implementation of 'smart' projects in selected 100 cities for urban transformation ensuring quality living to residents through smart solutions. Relying on primary data collected through an online survey, the paper finds lack of awareness among the respondents about the city-level governance structure, reflecting a disconnect between city government and citizens. A moderate positive correlation has been found between awareness about municipal wards and citizens lodging civic complaints. Furthermore, a negligible impact has been found with respect to citizens relying on social media and tech-based apps to engage in urban governance and accessing civic services. This paper contributes to the literature on urban governance and citizenship emphasizing on increased civic awareness about institutions of urban governance for active citizen participation beyond tech-led apparatus.

**Keywords:** governance, urbanization, social media, active citizenry.

## 1. Introduction

Amid rapid urbanisation and emerging challenges, the importance of citizen participation has been well-acknowledged and widely advocated for achieving an inclusive and sustainable urban development globally. Moreover, the paradigm of smart cities has further shifted the focus from a tech-centric approach to a citizen-centric approach in urban governance and development [1]. Urban scholars have reflected upon the theoretical and empirical aspects of citizen participation in smart urbanism, exploring different strategies, level and impact on smart cities development.

In the Indian context, over the years various laws, policies and schemes have been formulated for realising the goal of citizen participation in local governance and development. For example, the landmark 74<sup>th</sup> Constitutional Amendment Act (CAA), 1992 was enacted for the decentralised governance of urban centres with provisions for Area Sabhas and Ward Committees as avenues for community participation; the Jawaharlal Nehru National Urban Renewal Mission was launched in 2005 for balanced urban growth and enabling better access to basic services by the people with grants under the mission tied to cities undertaking mandatory reforms as enunciated in the 74<sup>th</sup> CAA; and, post-2014, host of urban schemes, including the Smart Cities Mission was launched with citizen participation as one of the key indicators for shaping vision and mission of the cities [2].

India's Smart Cities Mission was launched in 2015 to develop 100 targeted cities with the seamless integration of technology in infrastructural upgradation and delivery of quality services to the citizens [3]. It was stated that the selection of cities was contingent upon the level of citizen participation each city ensured as one of the parameters in the preparation of the smart city vision document setting forth city's goals and priorities by factoring in hopes and aspirations of the citizenry. While the case for active citizenship for inclusive, smart and sustainable cities had been proactively enunciated by policymakers, urban experts and civil society, the very prerequisite i.e., capacity to be an active citizenry, has not received the equal attention. Nonetheless, the importance of having a responsible and active citizenry performing duties is widely necessitated by the policymakers, and critics reflecting on what it takes to activate citizen participation in the smart city development.

In this backdrop, this research work, which is a part of an ongoing study of state practices and citizen participation in urban governance and development in India, explores the aspect of civic participation in smart cities, in particular, and urban development and local governance, in general, with a case study from an Indian city of Patna in the state of Bihar. The aim of the research is to explore and understand the way citizens engage in civic governance of the city. Furthermore, the research is aimed at identifying challenges hindering effective participation of the citizenry in civic governance and urban development. This study aims to provide insights into the very prerequisites for active citizenship. The research work contributes to the literature on citizen participation in smart and sustainable governance of cities.

The rest of the paper is organised as follows: The literature review section captures the scholarly work on citizen engagement in smart cities. The methodology section explains the rationale of the case study and tools relied upon for data collection and analysis. The results section presents the key findings, and the final concluding section reflects upon the contribution of this research work underscoring the relevance, limitations and further scope of the research study.

## **2. Literature review**

Literature review in this section lays focus on the scholarly work studying the citizenship aspect in smart cities development. It has been well conceived that any endeavour towards the urban transformation aimed at providing quality living to the citizens will be a futile exercise if the main stakeholder, the citizens, for whom the interventions have been made fail to participate and disown the project [4]. Any development strategies devoid of active citizen participation, therefore, make it a futile exercise. The literature here has mostly captured the work that relates to the underlying importance of citizen participation, enablers and barriers to participation, institutional requirements, and possible scenarios for effective community participation. Before, I move to capture the literature on citizen participation in urban transformation, it is pertinent to underscore what it entails. Borrowing from Arnstein [5], citizen participation relates to redistribution of power and citizen control in the decision-making process. Arnstein has given a critical yardstick arranged in the form a ladder to locate the level of citizen empowerment with top rung representing a greater control and say, the middle rung entailing a tokenistic involvement, and the bottom rung signifying disempowerment at best. To further add to this understanding, I would also like

to relate to how Salamah [6] has identified citizen participation as an instrument to achieve socially equitable urbanisation. Using case studies from two Indian cities – Magarpatta in Maharashtra and Tamil Nadu’s Auroville—the author has made the case of mainstreaming citizen participation for urbanisation which is socially equitable as a significant departure from the state-market dynamics [6].

### ***2.1. Tech-led citizen participation***

Scholarly work has marked a shifting focus of the policymakers in developing citizen-centric smart city from the earlier emphasis being laid on the reliance of technology. However, the role of technology in itself has been the solution in the wider reach and access of people for ensuring accountability, redressal of grievances and accessing quality services. Moving away from the notion of smart cities as an extension of neo-liberal practices and supporting state surveillance, Zandbergen and Uitermark [7] have showcased how does technological integration in urban governance has empowered citizens in making administration and bureaucracy accountable to the delivery of services. The affective part through citizens sense making afforded by the technological aid has made citizens in associating themselves as a key stakeholder in sustainable urbanisation. They have cited the case of an air quality monitoring tool in Amsterdam where it has enabled local citizens to be empowered with a tool to raise concerns with the rising cases of air pollution in their immediate surroundings. Active citizen engagement with technological aid in monitoring the air quality represent, authors argue, the case of citizens feeling a sense of belongingness and ownership in the development of the city.

Making a case of digitalisation and active use of social media listening method, Blasi et al., [8] have analysed the twitter data of the 28 Italian municipalities to argue that the utilising the tool of social media listening strategy can result in increased citizen participation enabled through “dialogic communication”. They have found that the greater presence and visibility of municipal works have resulted in wider civic engagements. They have found a negative relation between the density of the municipality and citizen’s engagement, implying smaller municipalities showing better engagement with the residents as compared to the bigger municipalities as laggards.

Praharaj et al., [3] have attempted to look at the gap between the push and initiatives of the government for digitalisation and capacity gap among citizens. In fast emerging economies like India, they argued, without adequate reach and digital infrastructure and where a vast majority is not connected online, socio-economic laggards and disparities will surmount challenges in achieving citizen engagement through online platforms. Echoing similar concerns with respect to the development of the Smart Cities Mission in India, Basu [9] identified digital illiteracy and digital divide as serious challenges in the realisation of the goal of urban transformation which is further amplified by the political intervention, bureaucratic control and top-down approach characterising the city governance in the country.

### ***2.2. Enabling factors of citizen participation***

Urban scholars have studied different regimes of citizen participation and suggested possible scenarios which can be enabling factors for people actively engaging in the

development projects. Examining the citizen participation strategies in two European cities from Belgium and Sweden, Simonofskia et al. [10] have underscored five context factors which can be critical for ensuring citizen participation in smart cities. These context factors include: a) whether a tech-centric or citizen centric approach has been integrated into the smart city development, b) whether the approach adopted is bottom-up or top-down in nature, c) what is the degree of centralisation/decentralisation, d) what are the legal requirements, and c) the maturity level of the citizenry. They have argued that these context factors can be implemented differently for different purposes, and there is a need to further examine other factors which can improve strategies for citizen engagement in governance of smart cities.

Exploiting the framework of citizens' sense of gain, Li et al., [11] have identified different factors influencing material and spiritual gains and formulated strategies for improving them based on data collected from citizens of Nanjing. They have argued that external opportunities emerging from citizens behaviours and attitudes are the most important criteria for pushing the sense of gains, and the division of smart infrastructure into various categories based on the hierarchy needs of the people as the top-rated strategy. Furthermore, they argue, it calls for better publicity and awareness for encouraging citizen participation, clarity on the part of the local government responsibilities and promoting citizen-friendly environment.

### ***2.3. Citizen participation – a difficult proposition to realise***

Smart city and citizenship literature has also dwelt on how does the exercise in citizen engagement is a difficult proposition to achieve, given the political economy of the neo-liberal governance practices making the exercise getting captured by experts and influential people. Using the case study of smart city initiatives in Atlanta, Georgia, Shelton and Lodato [12] have problematised the notion of “smart citizen” using a heuristic understanding of “general citizen” and “absent citizen” to underscore how citizens are actually discussed and enrolled in the smart cities' initiatives. They have further argued that the actual citizen participation turns out be much messier than what is originally understood in the smart city and smart citizen discourse. They have underscored the fact that in most such cases of decision-making for setting the goals and priorities for cities, those who would be the most impacted are mostly left out; they never get a chance to voice their concerns; however, such interactions happen in their names which is mostly gets captured by elite, experts and other representatives.

Using the case of Mexico City, Sweeting et.al., [13] have taken the Scott's institutional framework to explore the helpful and unhelpful institutions for citizen participation. Of the three – regulative, normative and cultural cognitive – aspects they have examined which are more amenable to change for creating a conducive environment for active citizen engagement. Having arrived at the conclusion that deinstitutionalisation of several institutions is beyond the reach of local actors to change, they have argued that ensuring citizen participation is an exercise which is easier said than done.

Scholarly work has also relied upon the Arnstein's ladder of citizen participation to examine the power distribution and empowerment of citizenry in smart city initiatives. For

example, Willems et al., [14] have used the framework to examine the relationship between the smart city initiatives in London and the level of citizen participation in several projects being undertaken. They have argued that the initial observation present weak citizen participation regime with none of the projects falling in the top rung of citizen control and empowerment as per the Arnstein's ladder.

Using the city of Helsinki as a case study, Jantti et al. [15] have identified three layers of governance namely strategic, executive and citizen interface, and examined how does the institutional pervasiveness influence the citizen participation. They have necessitated on the importance of embedding citizen participation in local governance by considering citizen participation as a core governance and management function.

Drawing on the review of literature in exploring the aspect of what is the main driving force of citizen participation in urban governance, in general, and smart cities, in particular, this research work examines the case of the Patna Smart city, one of the cities in Bihar being developed as smart cities.

### **3. Research method**

This research paper is based on a case study of the Indian city of Patna in Bihar. The state of Bihar is located on the Eastern map of India. Once the seat of power in ancient India, Bihar is the third most populous state with recording country's highest population density [16]. The rate of urbanisation is second lowest with mere 11.3 percent much below the national average of 31 percent [16]. Over the past several years, measures have been undertaken by the state government to catch up with the rate of urbanisation and addressing urban challenges with increased budgetary allocations. Under various state-led, central and centrally sponsored schemes like the Smart Cities Mission, Pradhan Mantri Awas Yojana -Urban, Swachh Bharat Mission, Heritage City Development and Augmentation Yojana, Aspirational District programme steps have been undertaken for ensuring sustainable urban development with seamless access of quality services to the citizenry [17]. Under the Smart Cities Mission, Bihar is developing four of its cities—Patna, Bhagalpur, Biharsharif and Muzaffarpur-- as smart cities. I had previously studied the level of citizen participation in smart city projects in Patna using the Arnstein ladder of citizen participation. I had argued that though the strategic focus on citizen participation has been well laid out, the realisation had been perfunctory. None of the smart city projects fell in the highest rung of the ladder and most of them fell in multiple layers in the lower rungs [18]. A parliamentary standing committee report on the Smart Cities Mission has lamented delays in the implementation of the smart city projects, irregular meetings of the Smart City Advisory Committee on identifying the priorities of the smart city projects, and failure to attract private investments for the development of smart city projects [19]. Out of initially approved 44 projects under the Patna Smart City, 29 projects were dropped and 14 additional projects were added under the urban transformation mission [20]. The Patna Smart City Ltd executed 29 projects as on November 2022 [20]. India's supreme audit authoring, the Comptroller and Auditor General of India in its Compliance Audit Report for the year ended 31 March 2022 stated poor planning and management to have delayed the smart city projects in the city [21, 20]. The CAG report has also found lack of adequate evidence on citizen engagement during the proposal making stage [20]. Differences between the Patna Municipal Commissioner

who is the Chairman-cum-Managing Director of the Patna Smart City Ltd (PSCL), a Special Purpose Vehicle for the implementation of the smart city projects in the city, and the city Mayor had been also reported in the media pertaining to alleged corruption in the tendering process for allocating work for the establishment of a smart car parking project under the mission [22]. Construction of a drainage-cum-road under the smart city projects got delayed over delay in giving tender for the project after the contractor who was given the tender earlier discontinued the work. Under the Mission, the Patna Smart City has implemented projects including construction of smart road, installation of solar rooftops, constructions of smart classrooms, Jan seva Kendras, e-toilets, emergency call boxes, and Integrated Command and Control Centre. The PSCL has further undertaken the Ganga riverfront development project and creation of happy streets under the mission. The Patna Smart City Ltd received the SKOCH award, an independently instituted civilian honour given for best practices in the fields of governance, technology, corporate citizenship and inclusive growth, for implementing e-challan system through Integrated Command and Control Centre project [23].

Recently, the newly formed government in Bihar has announced a slew of measures for increased industrial expansion and urban development in the state. These include establishment of 11 satellite townships/greenfield townships; developing the state as the Eastern India Tech Hub by establishing defence corridor, semiconductor manufacturing unit, mega tech city and fin-tech city. Towards this the state is also eyeing to establish the Bihar Artificial Intelligence Mission to leverage AI capabilities in the development of Bihar [24] [17] [15].

Well, the state is on the horizon of urban expansion and has been undertaking reform measures for industrial expansion and increased urbanisation, the effective citizen participation is warranted for the sustenance of the efforts being made and fuller realisation of its goals for whom projects are being targeted. Therefore, in order to understand how does the citizenry in Bihar relates to the developmental projects and as key stakeholders, a case study of Patna has been undertaken for an initial foray into understanding how citizens relate to the participation in urban governance and development projects, impact of digital intervention, if any, and the factors which can yield positive impact on ensuring active citizen engagement.

The research is based on collection of primary data from online surveys of residents in Patna. The data was collected through a structured questionnaire comprising closed-end and open-ended questions between May and June 2025. The questionnaire was administered through Google Forms. Out of total 75 municipal wards in the city, the survey covered 40 wards. The secondary sources include, key government documents, grey literature and media reports. The data collected was analysed quantitatively and qualitatively.

The case study approach allows an in-depth analysis of a problem being examined. Though the chances of replication are not guaranteed, the survey method provides the key starting point to examine other prevalent problems. In the absence of capturing the whole respondent size, the survey method allows the process of randomisation to obtain information for data analysis. Also, at the preliminary level the case study and survey

method along with a structured questionnaire can point towards the bigger picture to explore in a short duration intervention.

#### 4. Findings

Findings in this section discuss the preliminary observations based on the survey of a total of 191 respondents comprising 47% males and 53% females aged between 18 years and 85 years. Seventy percent of the respondents were single while 30% were married. Majority 91% were Hindus, 5% Muslims and 4% were followers of other religions. Fifty-one percent respondents lived in rented premises while 49% owned the premises. In terms of length of the stay in the city, it varied from between 1 month to 65 years. (see Appendix A for basic details of the respondents). Some of the major findings of this research work are categorised and presented here.

##### 4.1. Air pollution and waste dumping as major identified urban challenges

With the rising population and increased rate of urbanisation, the most common challenges that are widely talked about pertain to environment and ecology, and infrastructure related compounded by the management of solid wastes. The findings with respect to identification of urban challenges overall in the city and in the immediate surroundings of the surveyed respondents have been found to be on the expected lines. Respondents highlighted urban challenges majority of which relate to environment followed by infrastructure, governance, services and behavioural as shown below in the word cloud (see Fig 1 a). When asked about pertinent civic issues they had been facing in their immediate surroundings, they said these mostly relate to waste disposal followed by road with potholes, traffic congestion, noise and air pollution as represented below in the word cloud (see Fig 1 b).

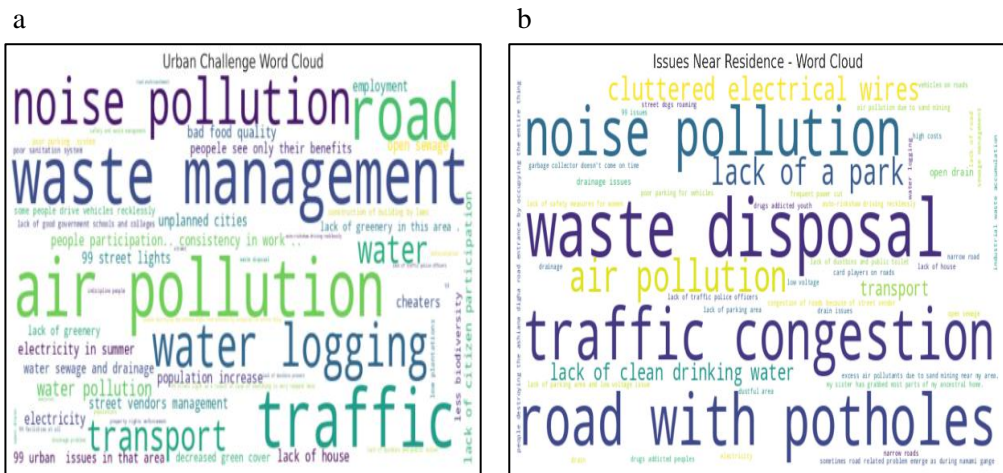


Fig. 1. (a) Word cloud showing urban challenges identified by the respondents in the city; (b) Word cloud showing urban challenges identified by the respondents in their immediate localities

Source: Created by the Author

##### 4.2. Low on lodging civic complaints

One of the critical aspects in terms active citizen participation, which the literature on smart cities development also talks about, is the sense of ownership and engaged activities in the

affairs of the civic issues in the state-citizen relationship, in the performance of duties and enjoyment of rights. Furthermore, it is also stated that participation empowers citizens using the various interface layers including easy and unhindered access to institutional avenues for redressal of civic grievances. In this research work, negligible civic engagement has been found in terms of reaching out to local officials and utilisation of various institutional avenues for citizen involvement. When asked where residents lodge complains, 39% said they had not lodged any complaint, 8% used social media to complain civic issues, 8% complained at the ward councillors’ office, 8% in some local citizen groups, 7% in municipal office, 5% using government portal and app, others used other multiple ways to lodge a civic complain (see Table 1). This stand in contrast to the mode of citizen engagement preferred in the Patna Smart City proposal which had identified social media including Facebook and Twitter apart from written complaints/feedback/suggestions as regular mode of engagement with the citizens [25].

Table 1. Avenues of lodging civic complaints

Avenue	Per cent (%)
None	39
Social media	8
Councilor office	8
Citizen groups	8
Municipal office	7
Government portal and app	5
Others	25

*Source: Compiled by Author*

Furthermore, when asked about the modes of lodging civic complaints, 45% said they had not complained, 28% said they complained orally, and 19% said they submitted a written complaints, while rest raised the issues orally, written and by participating in a public protest.

### **4.3. Low awareness and accessibility of local government**

Familiarity of governance structures and wider reach and visibility can make substantial impact on civic governance. This has been exemplified in the case of Italian municipalities as discussed in literature review [8], and also mostly witnessed during election campaigning where the candidates in the fray and the party leadership make all out efforts to connect with the voters, adopting all possible measures to influence voters to make them vote in their favour. When it comes to local governance and accessing basic services similar vigour and reach is found missing.

In this survey, majority of the respondents said they were not aware of the city level governance structures and the officials responsible for city governance. As shown in the Table 2, majority of the respondents are not aware of the city mayor, deputy mayor, municipal commissioner, and ward councillors. However, majority of them have exercised their universal adult franchise in national and state elections.

Table 2. Lack of awareness of city government officials

Category/question	Yes (%)	No (%)
Knowledge of Ward No.	48	52
Know Ward Councilor	30	70
Know Mayor	28	72
Know Deputy Mayor	6	94
Know Municipal Commissioner	10	90
Vote in general elections	54	46
Vote in Bihar elections	52	48

Source: Compiled by Author

On reaching out to city government for the redressal of civic issues, out of 94 respondents 60% said they do not reach out to ward councillors, 14% rarely reach out, 13% reach out on matter of urgent attention, 9% often reach out, rest reach out either when a meeting is called, every week and every month. Similarly, out of total 95 respondents 80% said they do not reach out to the city Mayor, 11% rarely reach out, 3% reach out on matter of urgent attention, rest reach out either often or when a meeting is called, every week and every month. In case of reaching out to the Deputy Mayor, out of total 78 who responded, 76% said they do not reach out, 12% rarely reach out, 5% reach out on matter of urgent attention, rest reach out either often or when a meeting is called, every week and every month. In case of reaching out to the Municipal Commissioner, out of 191, 84% said they do not reach out, 8% rarely reach out, 4% reach out on matter of urgent attention, rest reach out either often or when a meeting is called, every week and every month.

While majority of the surveyed people acknowledged the importance of citizen participation in development projects and preferred campaigning on a par during elections for civic governance, only a few of them have ever complained against any civic issue. Eighty-one percent respondents felt citizen participation is important, and 76% opined development projects can be better implemented if citizens are engaged in their implementation. When it comes to using digital tools, majority 77% said to have used a mobile app to access city services. However, only 9% have used the Clean Patna App, a civic body app to access city services in the city as shown in the Table 3.

Table 3. Importance of citizen participation

Category/question	Yes (%)	No (%)	Maybe (%)
Ever complained any civic related issues	25	75	--
Participation in public protest	13	87	--
Suggestions given on civic related issues	65	35	--
Use of mobile app to access civic facility	77	23	--
Use of Clean Patna app	9	91	--
Citizen participation in implementation of development projects important	81	10	9
Development projects better implemented if citizens are consulted	76	12	12
Campaigning for civic participation in urban governance at par with campaigning during elections for voter participation	77	12	11

Source: Compiled by Author

#### 4.4. Corruption is the biggest hurdle in civic grievance redressal

When asked about major challenges faced in getting a civic issue resolved, respondents pointed the case of corruption followed by lack of trust, lack of time and unwillingness on ward councillor/civic body as reflected in the word cloud in Fig 2.

The findings are in line with a separate study done where corruption and lack of time had been identified by majority of respondents in getting access to welfare schemes in the state. [26] Largely, in this and previous study, people stated that it is simply impossible to access the entitlements without bribing. However, the state has been trying to address the issue through direct cash transfers where welfare schemes entitle cash benefits to the eligible.

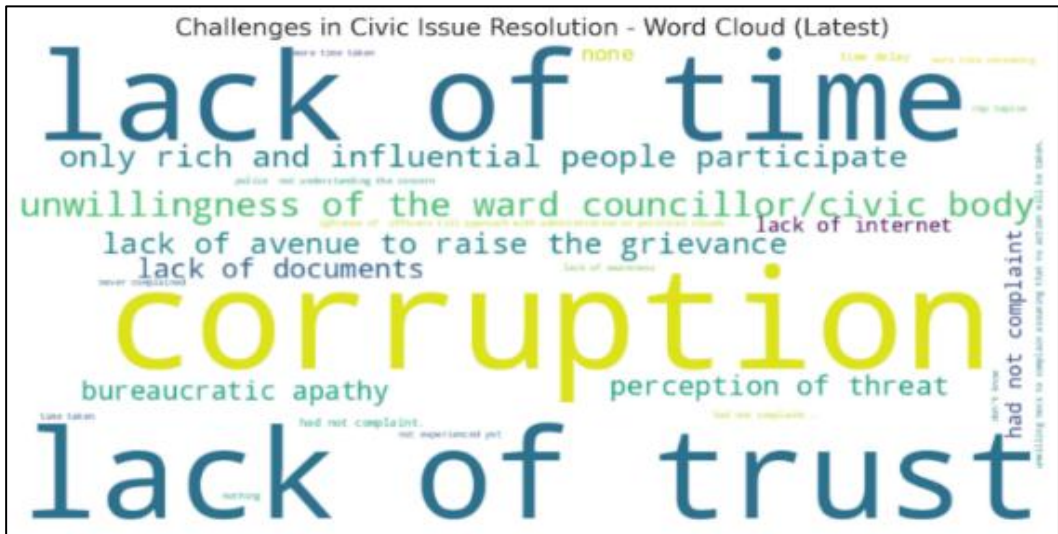


Fig. 2. Word cloud showing major challenges faced in getting civic issues redressed  
Source: Created by the Author

When enquired about how they get any civic issues resolved, 43% responded in negative, 29% said they act on their own, 14% said they reach out to someone in the government offices/Minister/Official, 5% said they reach out to some influential people, rest get issues resolved either on their own or reaching out to govt official or some influential people.

#### 4.5. Positive correlation between ward awareness and lodging civic complaints

One of the interesting findings of the survey is the moderate positive correlation between ward level awareness and lodging civic complaints by the respondents. It has been found that individuals with greater knowledge of ward-level governance are more likely to make civic complaints, reflecting potential awareness effect on civic governance. So, the key takeaway for the city government from this crucial finding is to invest in ensuring wider awareness, reach and accessibility of the local governance structure to breed familiarity. This also calls for enactment of the 74<sup>th</sup> CAA not just in letter but in spirit, by lesser control of the state on municipal governance and devolution of fund, functions and functionaries.

Table 4. Correlation between ward level awareness and lodging civic complaints (n=181)

Variable compared	r	p-value
Ward-level knowledge & civic complaint behaviour	0.30	<0.001

*Source: Compiled by Author*

## 5. Conclusion

An estimated over two-third of the global population will be living in urban areas by 2050. By that year, 60% of the Indian population is expected to live in urban centres. The projection for Bihar is to touch the current 31% national mark, signalling a significant increase in urban population growth in the state. The state government has been proactively taking measures for industrial expansion and planned urbanisation. With the increasing urbanization, the challenges are expected to be rising manifold if they are not tackled with adequate policy level measures, including effective engagement of the citizens in urban governance and development.

Amid the rising urbanization and emerging challenges as a result, the successive governments have launched schemes and missions to provide quality living in urban spaces through active participation of citizens. All laid emphasis on integration of digitalisation and citizen engagement. Though 10 years down the line, smart city projects are yet to be completed in several cities. Beyond the initial push for making the smart city vision document for city, the smart city projects in Patna have witnessed weak citizen engagement. Specifically, the push for digitalisation for smart solutions for accessing better services in the city is not being effectively put to use. In case of Patna, a dedicated app for city-based services and timely redressal of grievances has few takers, signalling the acceleration assumed with the digitalisation has been unrealizable so far.

The findings of the study direct towards emerging urban challenges with residents facing localised issues, low awareness level of citizens about the institutions of local urban governance, which could be hindering active citizen engagement in urban governance. Despite recognition on the part of the citizens that development projects can be better implemented had they been consulted, they seem to not get to know the institutional avenues of local governance. The utilisation of social media and digital app is also not forthcoming. Though an initial foray and preliminary observation, based on a very limited scale and relied upon online survey, it does indicate about further strengthening the urban local governance by making institutional avenues more accessible with requisite information and awareness to the citizens. This is critical for effective citizen engagement in ensuring citizen-centric governance.

The study is based on limited sample size. A larger sample of respondents and coverage of other cities could provide more accurate picture on the level of civic participation in urban governance by correlating with the level of education, gender, religion and category. Notwithstanding, the present study shed light on the larger disconnect between citizens and city level governance structure which requires strengthening for tackling rising urbanization and its pitfalls.

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### Appendix A: Basic Details of the Survey Respondents

Sl No.	Category	Detail
1.	Total no. of respondents	191
2.	Age	Between 18 and 85 years
3.	Gender	Male – 47% Female – 53%
4.	Religion	Hindu 91%, Muslim 5%, and others 4%
5.	Marital status	Single 70% and Married 30%
6.	Education	Graduate-other 45%, Masters 24%, Senior Secondary 9%, Secondary 5%, Graduate-engineer 5%, Others including no education 12%
7.	Premises	Owned 49% and Rented 51%
8.	Years in the city	1 month to 65 years
9.	Occupation	No occupation (students, housewife etc.,) 41%, self-employed 14%, Govt job-permanent 8%, Govt job-contractual 2%, Private-payroll 15%, Private-daily wager 4%, and others 16%
10.	Category	General 42%, OBC 39%, EBC 6%, SC 5%, others didn't respond 8%
11.	Income	Not applicable/no willing to answer-62%, above Rs 50,000 - 17%, between 10k and 20k - 10%, between 20k and 50k – 9%, between 6k and 10k – 2%
12.	Ward covered	(Total 40): 34, 5, 11, 29, 8, 2, 36, 7, 14, 16, 25, 3, 32, 33, 37, 4, 42, 6, 12, 13, 15, 17, 19, 21, 22, 22B, 22A, 23, 28, 31, 38, 41, 43, 46, 47, 48, 51, 56, 64, 84

Source: Compiled by Author

## References

- [1] K. Mkhitarian, A. Sanamyan and et al., "The smart city paradigm in the 21st century: Pathways and pitfalls," *Smart Cities and Regional Development (SCRD) Journal*, vol. 9(4), 2025.
- [2] D. R. Prasad and Y. Pardhasaradhi, "Twenty-five Years of the Constitution Seventy-fourth Amendment Act (74th CAA),1992: Promise and Performance," *Indian Journal of Public Administration*, vol. 66(2), pp. 159-178, 2020.
- [3] S. Praharaja, J. H. Han and S. Hawken, "Innovative civic engagement and digital urban infrastructure: Lessons from 100 Smart Cities Mission in India," *Procedia Engineering*, 2017.
- [4] L. Berntzen and M. Rohde Johannessen, "The Role of Citizen Participation in Municipal Smart City Projects: Lessons Learned from Norway," *Public Administration and Information Technology*.
- [5] S. R. Arnstein, "A ladder of citizen participation,," *Journal of the American Institute of planners*, vol. 35(4), pp. 216-224, 1969.
- [6] A. Salamah, "Participatory Urban Development in India: A Tale of Two Townships," *Environment and Urbanization ASIA*, vol. 12(1), pp. 136-147, 2021.
- [7] D. Zandbergen and J. Uitermark, "In search of the Smart Citizen: Republican and cybernetic citizenship in the smart city," *Urban Studies*, vol. 57(8), pp. 1733-1748, 2020.
- [8] S. Blasi, E. Gobbo and S. Sedita, "Smart cities and citizen engagement: Evidence from Twitter data analysis on Italian municipalities," *Journal of Urban Management*, 2022.

- [9] A. Basu, "Engage citizens to smarten city governance," *Smart Cities and Regional Development (SCRD) Journal*, vol. 9(2), 2025.
- [10] A. Simonofski, T. Vallé, E. Serrall and Y. Wautelet, "Investigating context factors in citizen participation strategies: A comparative analysis of Swedish and Belgian smart cities," *International Journal of Information Management*, 2019.
- [11] D. Li, W. Wang, G. Huang, S. Zhu and H. Feng, "How to Enhance Citizens' Sense of Gain in Smart Cities? A SWOT-AHP-TOWS Approach," *Social Indicators Research*, 2022.
- [12] T. Shelton and T. Lodato, "Actually existing smart citizens," *City*, 2019.
- [13] D. Sweeting, J. d. Alba-Ulloa, M. Pansera and A. Marsh, "Easier said than done? Involving citizens in the smart city," *EPC: Politics and Space*, vol. 40, no. 6, pp. 1365-1381, 2022.
- [14] J. Willems, J. Van den Bergh and S. Viaene, "Smart City Projects and Citizen Participation: The case of London," *Public Sector Management in a Globalized World*, 2017.
- [15] A. Jäntti, H. Paananen, A.-A. Kork and K. Kurkela, "Towards Interactive Governance: Embedding Citizen Participation in Local Government," *Administration & Society*, 2023.
- [16] F. D. Government of Bihar, "Bihar Economic Survey 2024-25," Government of Bihar, 2025.
- [17] S. Fatima, "Performing Governance in Urban Patna," in *Sustainable Urbanization in India: Challenges and Opportunities*, Springer, 2018, pp. 95-108.
- [18] D. Kumar, "Citizen Participation in India's Smart Cities Mission: The Case of Patna," in *23rd IASSI Annual Conference*, BIT Mesra, Ranchi, India, 2024.
- [19] Ministry of Housing And Urban Affairs, Standing Committee on Housing and Urban Affairs (2023-24), "Smart Cities Mission: An Evaluation," Lok Sabha Secretariat, New Delhi, 2024.
- [20] Comptroller and Auditor General of India, "Report No. 2 of the year 2024-Compliance Audit Report of the Comptroller and Auditor General of India for the year ended 31 March 2022," Comptroller and Auditor General of India, 2024.
- [21] B. Standard, "Poor planning, mgmt delayed projects in Patna Smart Cities Mission: CAG," *Business Standard*, Patna, 2024.
- [22] H. Harsh, "Charged with 'assault' after scuffle at corporation meeting, Patna Mayor's son on the run," *The Indian Express*, 2025.
- [23] S. Ratings, "SKOCH Ratings," [Online]. Available: <https://ratings.skoch.in/about-skochrating/>. [Accessed 29 11 2025].
- [24] G. o. Bihar, "Cabinet Secretariat Department," 2025. [Online]. Available: <https://state.bihar.gov.in/csd/SectionInformation.html?editForm&rowId=2929>. [Accessed 27 11 2025].
- [25] Government of India, Ministry of Urban Development, "Patna Smart City Proposal (BR-04-PAT)".
- [26] A. Gupta, D. Kumar and M. Fernandes, "Socio-economic Status of Marginalized Communities in the Seemanchal Region," *Asian Development Research Institute*, Patna, 2024.
- [27] P. S. C. Limited, "Smart City Patna," [Online]. Available: <https://smartpatna.co.in/home.aspx>. [Accessed 11 2025].