

Localization of Swachh Bharat Mission (Urban): A comparative analysis of Governance practices in Warangal and Karimnagar Municipal Corporations

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Abstract

The challenge of urban sanitation has become all the more intense with rapid population growth, with national governments handing over sanitation management to the local levels of the city governments. Under the Swachh Bharat Mission-Urban (SBM-U), the city governments, especially tier 2 cities, have been struggling to localize the national mandates to suit their unique native conditions. Previous research has predominantly relied on analyzing the SBM-U from a top-down governance perspective, focusing on tier-I cities such as Hyderabad or Pune. This study uses a mixed-methods approach to analyze the governance practices of tier 2 cities of Warangal and Karimnagar to understand how these municipal corporations localize the SBM-U mandates to deliver quality sanitation services. The data obtained through questionnaires, semi-structured interviews and focus group discussions are analyzed to evaluate the localization of SBM-U in these cities. Contrary to what has often been assumed, municipal corporations with smaller, compact administrative structures outperforms those with large, sprawling municipal structures. The findings indicate that while private sector outsourcing optimizes sanitation services, it weakens the democratic supervision of municipal corporation. It also shows that national missions perform better when city governments directly include marginalized communities in service delivery, rather than relying solely on technical top-down grievance applications like the Swachhata App. The study concludes that under SBM-U, tailoring sanitation policies to neighbourhood-specific needs allows local city government in both Warangal and Karimnagar to build cleaner, more responsive communities.

Keywords: Multi-level Governance, Localization, Urban Sanitation, Swachh Bharat Mission - Urban, Digital Era Governance, Private Sector Outsourcing.

1. Introduction

Globally, sanitation is recognized as a basic human right and a prerequisite for sustainable urban development. The adoption of the Sustainable Development Goals, particularly Goal 6, which aims to ensure the availability and sustainable management of water and sanitation for all, has encouraged governments to strengthen governance mechanisms for sanitation planning,

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implementation, and monitoring. Urban sanitation contributes to other SDG goals as well. Good health and well-being (Goal 3), sustainable cities and communities (Goal 11), climate action (Goal 13), and responsible consumption and production (Goal 12) have made urban sanitation strategically important within the wider context of Sustainable Development. (UN 2030 Agenda, n.d.)

In India, urban sanitation went through a significant policy transformation with the launch of the Swachh Bharat Mission - Urban in 2014. The mission has led to a shift from an infrastructure-centered sanitation programme to an integrated governance model. The mission combines universal access to sanitation, scientific solid waste management, attaining open defecation-free (ODF), behavioral change communication, performance-based management, digital monitoring, and enhanced citizen participation. Perceived as the world's largest sanitation drive, SBM-U introduced new institutional mechanisms, performance measurement frameworks and a collaborative approach (MoHUA, n.d.). This approach encourages collaboration of urban local bodies (ULBs), the state government, private agencies, and local communities. As a result, urban sanitation has become one of the most prominent fields for examining the governance structures, administrative practices, and institutional innovations that influence policy implementation and public service delivery.

Within the Indian context, Telangana is an important region for examining urban sanitation governance. Through its systemic reforms, administrative enhancements, strengthened municipal institutions, digital governance initiatives, particularly through its Pattana Pragati (Town Progress) programme, and the active implementation of the Swachh Bharat Mission - Urban, Telangana aspired to improve sanitation outcomes across its ULBs (CDMA, MA&UD, Government of Telangana, 2021). However, variations in institutional capacity, governance practices, stakeholder participation, and service delivery continue across municipalities. These differences provide a noteworthy opportunity to analyze how local government shapes the implementation and effectiveness of urban sanitation programmes.

A critical research gap exists in current urban sanitation literature, which emphasizes technological interventions, capital expenditure allocations, and infrastructure deficits while overlooking the institutional mechanics of localized governance. Existing scholarship offers limited comparative empirical evidence explaining how internal administrative tiers, democratic accountability, and localized community participation shape SBM-U outcomes at the field level. In this context, the present study examines the localized governance practices of Warangal and Karimnagar Municipal Corporations implementing SBM-U in Telangana. By focusing on municipal performance based on the spatial scale, contractual design, and community-led inclusion, the study intends to contribute to the expanding literature on urban governance and public administration. Also, the study attempts to provide valuable policy insights into the comprehensive sanitation framework, consequently advancing the vision of Amrit Kaal by strengthening urban sanitation within India's goal of becoming a developed nation by 2047, with a focus on Garbage Free Cities (GFC) (Ministry of Housing and Urban Affairs [MoHUA], 2021).

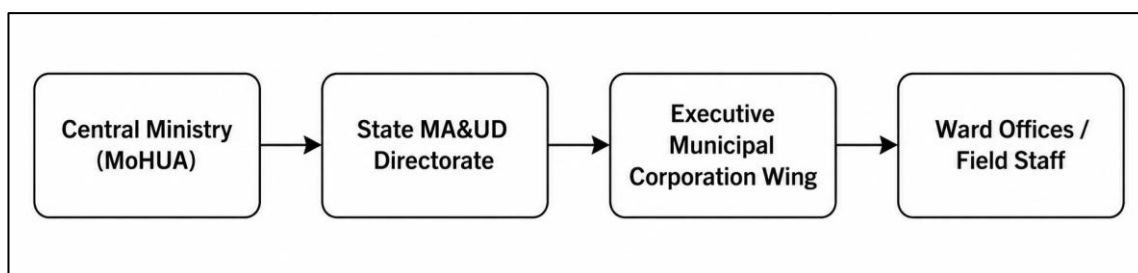
2. Review of Literature

The literature on urban governance experienced a significant change over the last three decades. Various scholars on urbanization have analyzed the governance structures and processes by evaluating the regional policies and their execution. To establish a rigorous bedrock for evaluating urban governance, implementation, and the extent of localization of SBM-U, the Corporations of Warangal and Karimnagar have been selected. This theoretical analysis synthesizes Multi-Level Governance (MLG), New Public Management (NPM), and Digital Era Governance (DEG) to analyze the localization, democratic supervision, and service performance of the SBM-U across different municipal tiers.

2.1 Multi-Level Governance & Spatial Scale

Multi-Level Governance (MLG) provides the primary framework for analysing how central SBM-U targets trickle down through state authorities (Municipal Administration & Urban Development) to local municipal corporations. Type-I MLG emphasizes non-overlapping, general-purpose jurisdictions arranged in a strict administrative hierarchy as shown in Figure 1, whereas spatial scale theory postulates that larger geographic footprints introduce internal fragmentation and transaction costs (Hooghe & Marks, 2002; O’Sullivan et al., 2014). Within this study, MLG is operationalized to evaluate the administrative friction between a large, multi-zonal, higher-tier corporation, Greater Warangal Municipal Corporation (GWMC), and a compact, single-tier corporation, Karimnagar Municipal Corporation (KMC). The analytical framework tests whether spatial compactness reduces internal coordination costs, enabling shorter communication loops between the Municipal Commissioner, localized Ward Secretariats, and frontline field operations.

Figure 1: Diagrammatic representation of Multi-Level Governance (MLG) process

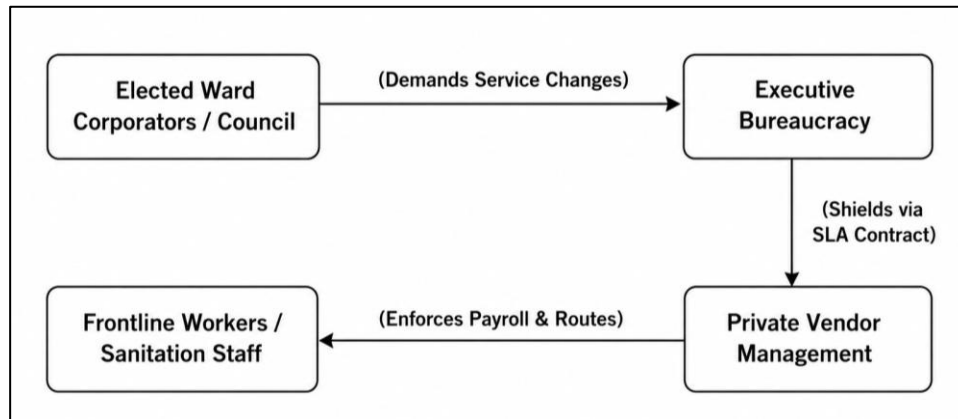


2.2 New Public Management & Democratic Deficit

New Public Management (NPM) theory posits that marketization, third-party service outsourcing, and contract-driven Service Level Agreements (SLAs) enhance operational efficiency and reduce upfront capital expenditure (CAPEX) for municipal local bodies (Barzelay, 2001). However, NPM mechanisms often decouple service delivery from traditional public oversight, giving rise to a "democratic deficit" (Nabatchi, 2010). This framework analyses the institutional friction between private sector concessionaires and elected Ward Corporators. When solid waste collection and secondary transportation are outsourced to private vendors, frontline workers become accountable to private corporate supervisors rather than local elected officials. The analytical model examines how legally binding contracts act as an administrative buffer, where executive bureaucrats protect municipal budgets from

breach-of-contract litigation, thereby neutralizing the municipal council's ability to penalize failing private vendors. Figure 2 below illustrates the frictional process between the Ward Corporators and Private vendors.

Figure 2: Process involved in Democratic Oversight vs. Contractual Buffer



2.3 Digital Era Governance & Algorithmic Surveillance

Digital Era Governance (DEG) focuses on the reintegration of services through centralized digital platforms, real-time surveillance, and automated data processing (Dunleavy, 2005). In urban sanitation management, DEG tools, such as biometric attendance portals, automated vehicle GPS trackers, and digital complaint apps (e.g., the Swachhata App), are deployed to eliminate human errors, curb absenteeism, and streamline grievance redressal. This study operationalizes DEG through a critical socio-economic lens to test whether top-down digital surveillance creates algorithmic exclusion. The analytical framework contrasts app-based grievance resolution against embedded, human-centric ward governance. It evaluates whether lower-income, marginalized households (by income and housing type) face structural barriers to digital adoption, relying instead on direct contact with Ward Officials and Ward Corporators.

3. Objectives of the Study

To establish a structured methodological framework for investigating the localization and to compare the institutional governance structures across GWMC and KMC, the following research objectives have been designed. This article is guided by the following research objectives:

1. To compare the governance practices of Warangal and Karimnagar municipal corporations to identify why a smaller, compact municipal corporation outperforms a large, sprawling corporation.
2. To comparatively analyze the friction between private sector outsourcing and democratic supervision of Ward Corporators in the delivery of sanitation services.
3. To examine whether SBM-U performs better when local governments actively include marginalized communities (by income and housing) in daily waste management, compared to solely relying on top-down grievance apps.

4. Research Methodology

This study adopts a comparative, mixed-methods empirical research design to examine the localisation and governance of the SBM-U across two urban local bodies (ULBs) in Telangana, India: Greater Warangal Municipal Corporation (GWMC) and Karimnagar Municipal Corporation (KMC). GWMC represents a sprawling, multi-zonal (Kasibugga Circle and Hanamkonda Circle), higher-tier municipal corporation covering 66 administrative wards, whereas KMC represents a spatially compact, single-tier municipal corporation comprising 60 administrative wards (<https://pp.emunicipal.in/>, 2025). The primary objective of the study is to evaluate how spatial scale, private sector outsourcing, and digital surveillance mechanisms impact municipal service performance, democratic political oversight, and socio-economic equity.

Data collection was executed using a convergent parallel mixed-methods approach comprising structured household surveys, frontline worker questionnaires, key informant interviews (KIIs), and focus group discussions (FGDs). A stratified random sampling technique was deployed across residential, commercial, informal/slum settlements, and peri-urban wards in both cities. The sample includes a total of 447 households ($N = 447$), 218 households from GWMC and 229 households from KMC. The structured questionnaire captured household demographics, waste segregation compliance, service satisfaction, digital app utilization (Swachhata App), and primary contact pathways during service disruptions. A targeted sample of 40 frontline workers (20 in GWMC, 20 in KMC), including Sanitary Inspectors, Sanitary Jawans, street sweepers, auto-tipper drivers, and drainage workers, was surveyed to evaluate digital attendance tracking (biometrics/GPS), supervisor conflicts, and perceived job security. Qualitative elite interviews (key informant interviews ($n = 20$)) were conducted with executive bureaucrats (Municipal Commissioners and Additional Commissioners) and political leaders (Mayors, Senior/Opposition Ward Corporators, and Ward Committee Members) across both municipal corporations. Eight sessions of structured Focus Group Discussions (FGD) were conducted with Contractual/Outsourced Sanitation Workers ($n = 4$ sessions across GWMC and KMC) and Women's Self-Help Groups / Development of Women and Children in Rural Areas (DWCRA) Collectives ($n = 4$ sessions) running Dry Waste Collection Centres (DWCCs) and composting sheds.

Quantitative survey data was processed and analyzed as follows. The scale and service performance were measured through 5-point Likert scales (1 = Very Dissatisfied / Strongly Disagree, 5 = Very Satisfied / Strongly Agree) evaluating collection timeliness, drain cleaning speed, ward staff monitoring, and ULB information clarity. Additionally, for comparative analysis, parametric independent-samples *t*-tests were conducted to measure statistically significant variance across city tiers. Similarly, the democratic deficit & outsourcing friction was evaluated by cross-tabulating frontline worker metrics on primary reporting authorities, exposure to conflicting orders, and algorithmic route adherence against qualitative political interview responses. Furthermore, the digital exclusion & socio-economic stratification was measured by comparing Swachhata App usage scores across annual household income groups and dwelling types. Differences across socio-economic strata were tested using one-way Analysis of Variance (ANOVA), while Pearson correlation coefficients (r) evaluated the

relationships between citizen participation, source segregation, and app reliance. Qualitative verbatim transcripts from interviews and FGDs were analyzed through inductive thematic coding aligned with the three research objectives. Triangulation was achieved by cross-validating quantitative citizen and frontline worker survey responses against executive administrative metadata, political transcripts, and frontline worker narratives.

5. Results

5.1 Spatial Scale, Urban Compactness, and Comparative Sanitation Performance

The empirical results demonstrate that municipal scale and spatial compactness have a significant impact on the operational efficiency and citizen satisfaction under Swachh Bharat Mission (Urban). Independent sample *t*-tests comparing household responses across GWMC ($n = 218$) and KMC ($n = 229$) indicate that KMC systematically outperforms GWMC across all key governance metrics.

Table 1: Comparative Evaluation of Sanitation Performance Metrics in GWMC and KMC

Metric Governance Variable	GWMC Mean (SD)	KMC Mean (SD)	t-statistic	p-value	Significance
Timeliness Satisfaction	3.56 (1.39)	4.26 (0.71)	-6.780	<.0001	Statistically Significant (p<0.05)
Cleanliness Satisfaction	3.27 (1.35)	3.98 (0.92)	-6.516	<.0001	Statistically Significant (p<0.05)
Ward Staff Monitoring	3.49 (1.02)	4.24 (0.72)	-8.932	<.0001	Statistically Significant (p<0.05)
Auto-Tipper Tracking	3.64 (1.37)	4.23 (0.67)	-5.772	<.0001	Statistically Significant (p<0.05)
Drainage Response Speed	2.93 (1.14)	4.21 (0.70)	-14.394	<.0001	Statistically Significant (p<0.05)
ULB Information Clarity	3.81 (1.04)	4.25 (0.67)	-5.398	<.0001	Statistically Significant (p<0.05)

Source: *Field Survey*
Note: SD = Standard Deviation.

Table 1 above shows that KMC achieved significantly higher citizen satisfaction scores for cleanliness ($Mean = 3.98, Standard Deviation = 0.92$) compared to GWMC ($Mean = 3.27, Standard Deviation = 1.35; t = -6.516, p < .0001$). The disparity is most pronounced in emergency drainage clearing responsiveness, where KMC scored 4.21 ($Standard Deviation = 0.70$) while GWMC scored 2.93 ($Standard Deviation = 1.14; t = -14.394, p < .0001$). Daily door-to-door collection coverage is higher in KMC (68.56%) than in GWMC (58.72%). Furthermore, 19.72% of GWMC respondents reported frequent overflowing garbage points over the past three months, whereas KMC registered 0.00% frequent overflow.

5.2 Private Outsourcing and Democratic Deficit

Data collected from frontline sanitation workers ($N = 40$) and citizen perception surveys confirm that private sector outsourcing shifts the locus of accountability away from elected Ward Corporators toward corporate managers and executive bureaucrats.

Table 2: Frontline Sanitation Oversight and Direct Impact Accountability (N=40)

Governance Dimension	Total Sample (N=40)	GWMC (n=20)	KMC (n=20)
Primary Impact on Job Security / Review			
Private Contractor Management	82.5% (n = 33)	55.0% (n = 11)	60.0% (n = 12)
Sanitary Inspector (Executive Wing)	15.0% (n = 6)	30.0% (n = 6)	40.0% (n = 8)
Ward Secretariat Administrative Officer	2.5% (n = 1)	15.0% (n = 3)	0.0% (n = 0)
Elected Ward Corporator (Political Head)	0.0% (n = 0)	0.0% (n = 0)	0.0% (n = 0)
Conflict & Compliance Indicators (Mean 1–5)			
Conflicting Work Instructions Received	3.80	3.80	3.80
Stricter Standards Placed on Outsourced Staff	4.33	4.30	4.35
System Workarounds / Algorithmic Gaming	2.67	3.00	2.35

Source: Field Survey

Table 2 indicates that overall, 82.5% of frontline workers stated that private contractor managers hold direct impact over their job security and performance review, whereas 0.0% selected the elected Ward Corporator. Frontline workers reported high exposure to conflicting orders from elected representatives and private supervisors (*Mean* = 3.80). While citizens perceive private vendors as operating with higher equipment standards (*Mean* = 3.94), 100% of interviewed collection crews confirmed that they follow private contractor routes over Corporator requests when instructions conflict.

5.3 Marginalized Inclusion vs. Top-Down Digital Surveillance

Quantitative analysis reveals a severe socio-economic split in the usage and efficacy of top-down digital grievance apps compared to localized, human-centric ward structures. A one-way ANOVA confirms statistically significant variance (F) in digital app adoption across income strata ($F = 956.52, p < .0001$), meaning different income groups change how they adopt apps by a very large amount, and dwelling types ($F = 961.14, p < .0001$), meaning the type of home a person lives in also strongly affects their app use. Households earning below ₹2.5 Lakhs reported an app usage mean of 1.69/5.00, whereas higher-income groups averaged above 4.65/5.00. When waste collection stops for three days, 0.0% of low-income residents utilize digital tools; instead, 58.39% meet their Ward Corporator and 41.61% visit the Ward Office. Focus group discussions with Self-Help Groups (SHGs) confirm that high source segregation is driven by peer pressure and doorstep collection freezes (enforced by DWACRA women) rather than digital surveillance.

6. Discussion

The comparative findings substantiate the structural advantages of urban compactness in municipal administration. GWMC's sprawling, multi-zonal footprint introduces administrative fragmentation, where policy mandates pass through zonal commissioners and regional sanitation and engineering wings, creating institutional lag and resource disparities between core and peripheral wards. In contrast, KMC's single-tier layout allows the Municipal Commissioner to exert direct, unified command over field staff. This short communication loop reduces response times for urban drainage infrastructure failures (*Mean* = 4.21 in KMC vs. *Mean* = 2.93 in GWMC) and eliminates chronic waste points. Spatial compactness acts as an operational multiplier, allowing smaller urban local bodies to outperform larger, resource-rich municipal corporations.

The results highlight a fundamental democratic deficit inherent in contract-driven urban service delivery. When municipal corporations outsource solid waste management to private concessionaires under Service Level Agreements (SLAs), they establish legal barriers that insulate vendors from local political oversight. As demonstrated by interview data from both city mayors and ward corporators, elected representatives are stripped of direct supervisory power over frontline workers. Executive bureaucrats prioritize shielding municipal budgets from breach-of-contract litigation, often overriding General Body resolutions passed against erring private contractors. Consequently, frontline workers answer to private supervisors to protect their wages (82.5%), leaving elected representatives politically accountable to voters for service breakdowns they lack the legal authority to rectify.

Finally, the study critiques the reliance on top-down digital surveillance tools under SBM-U 2.0. While digital dashboards, GPS trackers, and biometric portals provide executive administrators with baseline presence data, they introduce algorithmic exclusion among low-income and informal settlement residents. Basti dwellers, who face higher rates of digital illiteracy and structural connectivity barriers, are systematically excluded by app-based grievance mechanisms. For these marginalized groups, democratic accountability remains rooted in face-to-face interactions with local Ward Corporators and Ward Officials. Furthermore, qualitative focus groups reveal that private outsourcing contracts frequently bypass women-led SHG recycling cooperatives in favour of mega-concessionaires, stripping marginalized communities of decentralized waste livelihoods. Sustainable urban sanitation requires shifting from exclusionary algorithmic monitoring toward embedded, community-led governance frameworks.

7. Conclusion

Although both municipal corporations of Warangal and Karimnagar implement the same SBM-U guidelines, the compact administrative structure of Karimnagar facilitates closer coordination, faster decision-making, stronger field-level supervision, and more responsive service delivery than the larger and more spatially dispersed governance system in Greater Warangal. The study further shows that while private sector outsourcing contributes to operational efficiency in sanitation services, it can also weaken democratic accountability when contractual management reduces the supervisory role of elected Ward Corporators. Effective sanitation governance therefore depends not only on efficient service contracts but also on institutional mechanisms that preserve democratic oversight and ensure that elected representatives remain actively engaged in monitoring service delivery. The findings also indicate that digital governance tools enhance operational monitoring, grievance tracking, and administrative transparency. However, technology alone cannot substitute for inclusive local governance. Municipal performance is strengthened when local governments actively engage marginalised communities, including low-income households, disadvantaged social groups, and residents of underserved settlements, in everyday sanitation planning and implementation. Participatory governance improves both service responsiveness and the equity of sanitation outcomes beyond what can be achieved through technology-driven complaint systems alone.

Overall, the study argues that the successful localization of the Swachh Bharat Mission (Urban) depends on achieving a balanced governance model that integrates administrative efficiency, democratic accountability, and social inclusion. Rather than viewing digital technologies or private outsourcing as stand-alone solutions, policymakers should strengthen ward-level institutions, reinforce the oversight role of elected representatives, and promote participatory governance to ensure that national sanitation programmes are effectively adapted to local institutional and social contexts. These findings contribute to the broader literature on decentralized urban governance by demonstrating that local institutional capacity and inclusive governance practices are fundamental determinants of sustainable urban sanitation outcomes.

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Conflict of Interest

The author declares no conflict of interest.

Ethical Considerations

Voluntary participation and informed consent were obtained from the participants after providing them with clear information about the study's purpose. To safeguard the privacy of participants, confidentiality, and anonymity were maintained and they were assured that the data collected will be strictly used for research purposes only. Participants were also informed of their right to withdraw from the study at any time.

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