International Journal of Innovative Research & Growth
E-ISSN: 2455-1848
homepage: http://www.ijirg.com/ijirg/
Volume: 14 Issue: 3, July 2025

Financial Strength Post- Muni Bond: Readiness of Selected Smart Cities for the Urban Challenge Fund

Prof. Amit Singh[1], Prof. Lovleen Gupta[2], Pankaj Goel[3*]
[1]Professor, Department of Commerce, Delhi School of Economics, University of Delhi, New Delhi-110021, India
[2]Professor, Department of Commerce, Hindu College, University of Delhi, New Delhi-110021, India
[3]Ph.D Scholar, Department of Commerce, Delhi School of Economics, University of Delhi, New Delhi-110021, India

CORRESPONDING AUTHOR

Pankaj Goel
e-mail: pankajj@capankajgoel.com

KEYWORDS

Financial Strength, Indian Smart Cities, Muni-Bonds, Urban Challenge Fund

ARTICLE DETAILS

Received 03 May 2025; revised 25 May 2025; accepted 23 June 2025

DOI: 10.26671/IJIRG.2025.3.14.138

CITATION
Singh, A., Gupta, L., Goel, P. (2025). Financial Strength Post- Muni Bond: Readiness of Selected Smart Cities for the Urban Challenge Fund. *Int J Innovat Res Growth*, 14(3), 14312-14321. DOI

Abstract

With rapid urbanization and the closure of the Smart Cities Mission, the need for alternative and sustainable funding sources, particularly municipal borrowing, has become increasingly urgent. Cities, especially those identified as Smart Cities, must now take full responsibility for completing ongoing projects, their operations and maintenance (O&M), and long-term infrastructure sustainability. This study evaluates the financial strength of eight Indian Smart Cities that have already issued municipal bonds, focusing on their capacity to service existing debt and their readiness to raise additional funds under the proposed Urban Challenge Fund. Based on income and expenditure data for the four years ending in 2023–24, sourced from the City Finance Portal, the analysis employs a combination of accounting and statistical tools. These include trend analysis of Operating Surplus (OS), EBIDA, and the Interest Coverage Ratio (ICR), along with statistical tests such as correlation, regression, Shapiro-Wilk for normality, Durbin-Watson for autocorrelation, and VIF for multicollinearity. Non-parametric tests were used where normality was not observed. The four-year average of key indicators formed the basis for evaluating debt-servicing capacity. Findings show that Ahmedabad and Pune are financially strong, while Indore and Surat show mixed results. In contrast, Bhopal, Vadodara, Lucknow, and Pimpri Chinchwad reflect weak financial health. The results highlight that even bond-issuing cities face challenges, signaling the need for cities yet to enter the bond market to strengthen their financial preparedness, offering a compelling direction for future research. The study offers key insights into municipal financial sustainability, accountability, and strategic funding readiness.

1. Introduction

India's rapid urbanization presents both a transformative opportunity and a considerable challenge. With the nation's population expected to grow from 1.21 billion in 2011 to 1.518 billion by 2036, and the urban population projected to increase from 377 million in 2011 to over 600 million by 2036 (MoHFW, 2019), cities will become increasingly crucial in driving the country's economic and infrastructural development. Urban areas currently contribute 63% to India's national GDP (Niti Aayog, 2022), a share that is expected to exceed 75% by 2030 and surpass 80% by 2050 (MoHUA, 2023). However, this rapid urban growth also elevates the demand for critical infrastructure, such as water supply, sanitation, housing, energy, and transportation. According to the India Infrastructure Report 2023, Rs1 trillion will be required over the next two decades to meet these escalating demands.

India is targeting a $7 trillion economy by 2030, which necessitates swift and significant investments in urban centers. While banks and financial institutions have historically been the main sources of funding for Urban Local Bodies (ULBs), a substantial financing gap persists in meeting the country's ambitious urban investment goals. Despite this pressing need for capital, Indian municipalities generate only around 1% of GDP through local revenues, significantly lower than emerging economies like Brazil and South Africa, where municipal revenues constitute 6-8% of GDP (Athar, S., White, R., & Goyal, H. (2022) (RBI, 2022). As a result, urban local bodies (ULBs) have increasingly turned to alternative financing mechanisms, particularly municipal bonds, to meet infrastructure financing requirements.

- Municipal bonds (Muni-bonds) have emerged as a promising financial instrument to help bridge this gap (Praveena, C. A. K. R., 2023, May).

This study assesses the financial strength of eight selected smart cities out of seventeen Indian Smart Cities that have issued municipal bonds in compliance with SEBI guidelines as of 30th April 2025, focusing on their capacity to meet current and future interest commitments as part of their debt-servicing obligations. (Issue and Listing of Debt Securities by Municipalities) Regulations of 2015. The focus is on analyzing post-issuance financial performance, specifically examining key indicators to assess debt-servicing capacity, which are critical in the context of the Union Budget 2025-26 announcement of the Rs 1 lakh crore Urban Challenge Fund (UCF). The UCF aims to support urban development projects, requiring cities to co-finance at least 50% of project costs through bonds, loans, or public-private partnerships (MoF, 2025). This initiative underscores the importance of creditworthiness and sustainable revenue generation for cities seeking to access performance-based funding.

In this context, the study explores whether the selected cities have the financial capacity to meet their debt obligations through internally generated revenues and whether their financial resilience positions them to benefit from emerging funding mechanisms such as the UCF. The research is guided by the following objectives:

1. **To assess the post-bond financial performance** of the selected cities, focusing on their operating surplus, Earnings Before Interest, Depreciation and Amortisation (EBIDA), and capacity to service debt through internal revenues**.**
2. **To evaluate the financial preparedness** of these cities in terms of debt servicing to access performance-based funding under the UCF, based on their financial robustness (MoF, 2025).
3. **To recommend key reforms** in municipal financial management that will enhance long-term fiscal sustainability and creditworthiness, helping other ULBs replicate successful models for capital market participation and access to incentive-based funding.

By examining these critical dimensions, this study seeks to offer actionable insights for policymakers, urban finance professionals, and municipal administrators aiming to enhance financial governance and formulate sustainable strategies for securing innovative urban infrastructure financing. The structure of the article is as follows: Section 2 discusses the evolution of municipal bonds in India, tracing their genesis to the present day. It also outlines the incentives provided by the Ministry of Housing and Urban Affairs (MoHUA) to encourage their adoption with minimum earnings for debt servicing **Section 3** provides a comprehensive literature review, guided by the PRISMA framework, with a particular focus on the post-issuance financial performance of Indian cities that have floated municipal bonds, alongside the theoretical underpinnings and research hypotheses. **Section 4** details the research methodology, including sampling design, data collection procedures, and analytical approaches. **Section 5** presents the empirical results and discussion. Finally, **Section 6** concludes the study, highlighting key policy implications, study limitations, and directions for future research.

2. About Municipal Bonds Genesis Till Date

Municipal bonds are debt securities issued by Indian cities to raise funds for urban infrastructure initiatives, including water supply, sanitation, waste management, roads, bridges, and public transport (Institute of Chartered Accountants of India, 2018). The India Infrastructure Report 2023 and recent information from the Securities and Exchange Board of India (SEBI) indicate that numerous Indian cities have successfully issued municipal bonds to date. (Table 1). Since 1997, only 50 municipal bond issuances have taken place, aggregating to approximately INR 6,933 crore (~USD 850 million). However, these issuances have been geographically concentrated, with 10 Municipal Corporations (MCs) accounting for 27 of the 50 issuances, and ULBs from only eight states participating. The municipal bond market witnessed two major policy shifts in 2015: the launch

of the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), which promoted bond issuance through credit ratings and financial incentives, and the release of SEBI's Issue and Listing of Municipal Debt Securities (ILMDS) Regulations. Consequently, bonds issued post-2015 are governed by a more robust regulatory framework, unlike the earlier issuances. An analysis of 17 recent municipal bond issues, totaling approximately INR 2,783 crore, reveals a growing interest in sustainable finance. Of the last seven issuances, four (approximately 25% of the sample by value) were designated as green bonds. (Bibhudatta, Amlan, and Dishant Rathee, 2025)

In its April 2025 directive, the Ministry of Housing and Urban Affairs (MoHUA) emphasized the role of municipal bonds, particularly pooled municipal bonds, as a key mechanism for urban infrastructure financing. Under the reform-linked incentive scheme, ULBs can receive an additional Rs 5 crore per Rs 100 crore raised, provided the proceeds are earmarked for Renewable Energy or Energy Efficiency projects. This effectively translates to a 2.8% incentive[1], assuming the bond qualifies as a Green Bond and raises ₹100 crore for eligible projects (MoHUA, 2025). Officially labelled "green" municipal bonds tend to have lower borrowing costs compared to regular bonds. Even if the bonds are used for green purposes but lack the green label, they still incur lower costs than traditional bonds. This suggests that green projects, by their nature, attract more affordable financing. (Bibhudatta, Amlan, and Dishant Rathee, 2025)

If a typical municipal bond carries a coupon rate of around 9%, a 2.8% incentive effectively lowers the debt servicing cost for the issuing state or city to approximately 6.2%. From a financial sustainability standpoint, an Urban Local Body (ULB) with an Interest Coverage Ratio (ICR) or Earnings Before Interest, Depreciation, and Amortization (EBIDA) greater than 1 would be deemed financially viable, as it indicates the capacity to comfortably meet debt obligations in the 6–7% range.

In the context of zero tax obligations for Indian Urban Local Bodies (ULBs), cities intending to service municipal bond obligations, particularly at a coupon rate of 6.5%, must ensure adequate Earnings Before Interest, Depreciation, and Amortization (EBIDA) to maintain fiscal sustainability. To achieve a break-even point with an Interest Coverage Ratio (ICR) of 1.0x, the EBIDA must be at least 6.5% of the total bond value. However, for long-term debt sustainability and to enhance the creditworthiness of municipal entities, especially under pooled financing mechanisms, a more prudent ICR range of 1.5x to 2.0x is recommended. (National Institute of Urban Affairs,2022). This equates to an EBIDA requirement of 9.75% to 13% of the total debt raised, thereby providing a necessary buffer against potential revenue shortfalls and economic uncertainties.

- Accordingly, for this study, positive operating surplus and an ICR of 1.5x shall be adopted as prime benchmark parameters for evaluating the financial strength of prospective municipal bond-issuing cities. This approach ensures that cities maintain adequate surplus capacity to address future contingencies and retain investor confidence in the evolving municipal debt market.

Table 1: Status of Issuance of Municipal Bonds after SEBI (Issue and Listing of Debt Securities by Municipalities) Regulations, 2015

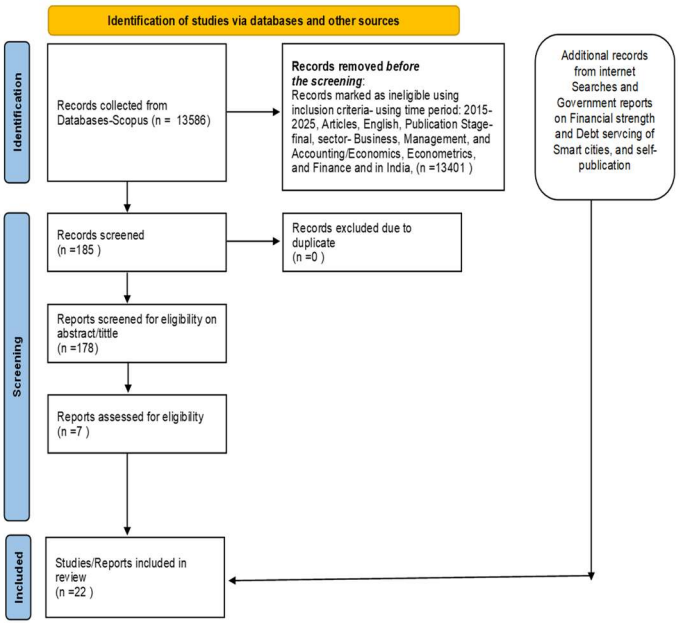
Sr. No.	Name of Municipality	Date of Issue	Date of Maturity	Amount (Rs. In Crs.)	Coupon (%)	Tenure (in years)
1	Pune Municipal Corporation	June 20, 2017	20-06-2027	200	7.59	10
2	Greater Hyderabad Municipal Corporation	Feb 16, 2018	16-02-2028	200	8.9	10
3	Indore Municipal Corporation	June 28, 2018	29-06-2028	139.9	9.25	10
4	Greater Hyderabad Municipal Corporation	Aug 14, 2018	14-08-2028	195	9.38	10
5	Bhopal Municipal Corporation	Sept 25, 2018	26-09-2028	175	9.55	10
6	Greater Vishakhapatnam Municipal Corporation	Dec 21, 2018	21-12-2028	80	10	10
7	Ahmedabad Municipal Corporation	Jan 11, 2019	15-01-2024	200	8.7	5
8	Surat Municipal Corporation	Feb 27,2019	01-03-2024	200	8.68	5
9	Greater Hyderabad Municipal Corporation	August 20, 2019	21-08-2029	100	10.23	10
10	Lucknow Municipal Corporation	November 13, 2020	18-11-2024	200	8.5	4
			18-11-2025			5
			18-11-2026			6
			18-11-2027			7
			18-11-2028			8

			18-11-2029			9
			18-11-2030			10
11	Ghaziabad Nagar Nigam	March 31, 2021	06-04-2025	150	8.1	4
			06-04-2026			5
			06-04-2027			6
			06-04-2028			7
			06-04-2029			8
			06-04-2030			9
			06-04-2031			10
12	Vadodra Municipal Corporation	March 24, 2022	28-03-2027	100	7.15	5
13	Indore Municipal Corporation	February 20, 2023	20-02-2026	244	8.25	3
			20-02-2028			5
			20-02-2030			7
			20-02-2032			9
14	Pimpri Chinchwad Municipal Corporation	July 28, 2023	July 28, 2028	200	8.15	5
15	Ahmedabad Municipal Corporation	February 07, 2024	February 06, 2029	200	7.9	5
16	Vadodara Municipal Corporation	March 05, 2024	March 04, 2029	100	7.9	5
17	Rajkot Municipal Corporation	October 21, 2024	October 18,2028	100	7.9	4
			October 18,2029			5
	Total			2783.9		

Source- India Infrastructure Report 2023 and https://www.sebi.gov.in/statistics/municipalbonds.html

3. Literature Review

The existing body of literature on Smart Cities in India presents a diverse range of research, yet a significant gap persists in understanding the financial readiness and debt-servicing capacities of Smart Cities issuing municipal bonds, especially in India. A systematic literature review was conducted using the Scopus database, aligned with the PRISMA framework, and supplemented by government reports to address this gap. The search, restricted to the 2015–2025 period and relevant academic disciplines, revealed a lack of direct studies on municipal bonds issued by Indian Smart Cities, highlighting a pressing need for empirical investigation in this niche area. Those 7 papers selected have been analysed below, and the remaining 15 papers have been used for reference cited in the paper.



- **Development of India-Specific Smart City Evaluation Frameworks**

Sharma and Tayal (2019) developed a multi-dimensional ranking framework tailored to Indian urban environments. By incorporating eight locally relevant themes—including finance, e-governance, infrastructure, and security—they provided a more context-sensitive alternative to Western-centric models. Their use of a distance-based algorithm (DBA) for city ranking enabled a more nuanced assessment of urban capabilities across 80 indicators. Chakraborty et al. (2021) further advanced these frameworks through a multi-method analytical model combining DEMATEL, k-means clustering, and MABAC techniques. This approach allowed not only for the ranking of cities but also for diagnosing the underlying causal relationships between performance criteria. These methodological innovations signify a maturing field that recognizes the complexity of urban governance in India.

- **Implementation Challenges and Perception Gaps**

Sambher and Sharma (2023) employed a case study approach in Shimla to explore the on-ground realities of smart city projects. The study found a disconnect between official narratives and citizen experiences. Although some infrastructure goals (e.g., waste collection coverage) had been achieved, public dissatisfaction and limited understanding of the smart city concept among elected representatives highlighted a failure in stakeholder engagement and capacity-building. This gap between policy design and ground-level execution underscores the importance of financial readiness, participatory planning, and robust communication strategies in urban reforms.

- **Financial Performance in Other Indian Sectors**

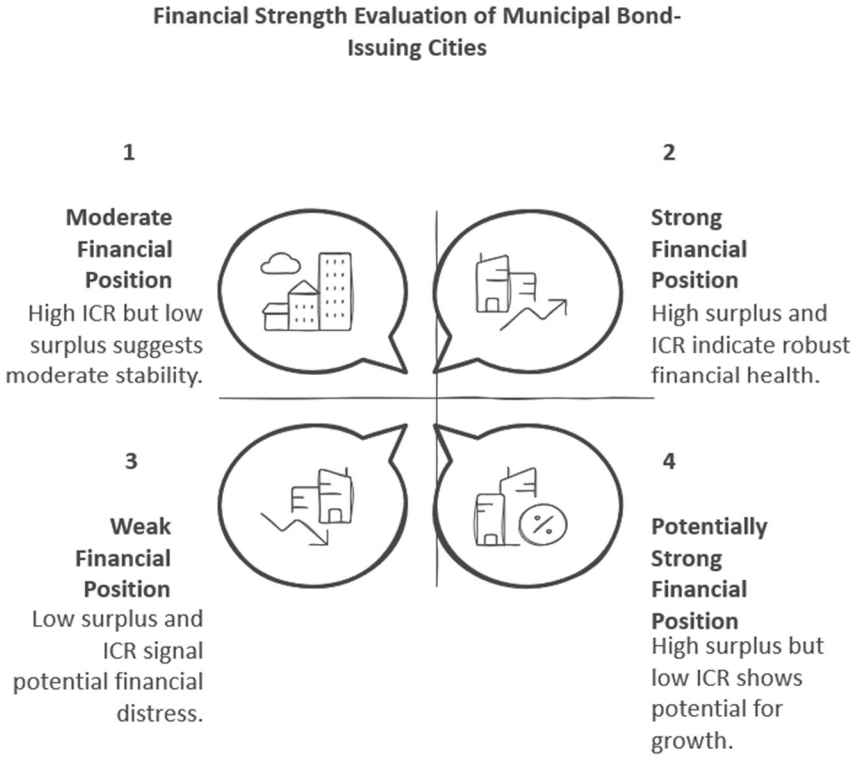
While limited research exists on the financial performance of Smart Cities, related studies in other Indian sectors provide methodological direction. Swalih et al. (2021) and Kolte et al. (2022) used financial ratios and models such as the Altman Z-score and Piotroski F-score to assess bankruptcy risk and financial strength in the automobile and IT sectors. These tools proved effective in gauging financial robustness, with both sectors demonstrating low leverage and strong performance indicators. Jeet and Aspal (2020) examined public sector banks using panel data regression and found that variables like liquidity, human capital, and asset quality significantly influenced return on equity (ROE). In contrast, capital adequacy and earnings quality showed limited predictive power. Similarly, Pal Narwal et al. (2015) compared banks and microfinance institutions, concluding that institutional size and asset spread were key drivers of financial outcomes. Together, these studies demonstrate the applicability of robust financial metrics and econometric models in assessing fiscal health, tools that could be adapted for evaluating municipal financial strength in Smart Cities.

- **Systems Thinking and Urban Development Dynamics**

An emerging strand of literature uses systems mapping to explore urban development. The Better Health for Cities (BHC) study (2022) in Indore employed participatory workshops and stakeholder mapping to identify bottlenecks across governance, service delivery, data systems, and community infrastructure. Similarly, a 2022 study on intelligent transport employed fuzzy cognitive mapping to link 20 developmental variables across policy, technology, and stakeholder perception dimensions. These systems-based approaches offer a holistic lens through which to examine the interplay between urban policies, stakeholder behavior, and institutional capacity—essential considerations for the long-term financial sustainability of cities.

- **Synthesis and Gaps Identified**

The literature reviewed highlights significant contributions in three key domains: (i) customized evaluation models for financial strength for Smart Cities, especially for post-muni bond in India, (ii) sectoral financial health assessments using advanced analytical tools. *However, there remains a notable absence of empirical studies focused on the financial readiness of Smart Cities to service municipal debt or their preparedness to access competitive funds like the Urban Challenge Fund for cities that have issued Muni bonds. The present study seeks to bridge this gap by analyzing the debt-servicing capacity of Smart Cities that have issued municipal bonds, using both accounting and statistical techniques rooted in these preceding bodies of work.*
Against the backdrop of the limited academic focus on municipal bond financing within the Indian Smart Cities context, and informed by insights from existing literature on smart city evaluation frameworks, financial performance analysis, and systems-based urban planning approaches, the following research framework is proposed:



- Thus, ICR above 1.5 and positive Operating Surplus have been considered as two key parameters to assess financial strength.
- Against the above context, the financial strength of municipal entities is assessed using financial ratios, with a particular emphasis on the Interest Coverage Ratio (ICR). The following null hypotheses are being tested in this research paper:

Hypothesis ID	Hypothesis Statement	Variable(s) Involved	Test Type	Rationale
H_1	The distribution of EBIDA, Interest Expense, and Operating Surplus follows a normal distribution	EBIDA, Interest Expense, and Operating Surplus	Shapiro-Wilk Test	To select Parametric and Non-Parametric test
H_2	There is no significant relationship between EBIDA, Interest Expense, and Operating Surplus.	EBIDA, Interest Expense, Operating Surplus	Spearman's Rank Correlation (non-parametric)	To test the independence of the three variables.
H_3	The Operating Surplus is independent of EBIDA and Interest Expense.	Operating Surplus, EBIDA, Interest Expense	Regression	Testing if Operating Surplus is significantly dependent on EBIDA and Interest Expense.
H_4	The Interest Coverage ratio is independent of EBIDA and Interest Expense.	Interest Coverage ratio, EBIDA, Interest Expense	Regression	Testing if the Interest Coverage ratio is significantly dependent on EBIDA and Interest Expense.
H5	The median Operating Surplus is zero (no financial strength or weakness, i.e., the city breaks even).	Operating Surplus	One-Sample Wilcoxon Signed Rank Test (non-parametric)	Testing if the median of Operating Surplus is positive.
H6	The median Interest Coverage ratio is 1.5 or greater. .	ICR (calculated from EBIDA and Interest Expense)	One-Sample Wilcoxon Signed Rank Test	Testing if the ICR median is below the threshold for financial strength.

4. Research Methods

This study adopts a quantitative research design to evaluate the financial performance of eight purposively selected Indian cities that have issued municipal bonds since 2019 and have outstanding bond liability as on 31.03.24. The analysis draws upon audited financial data from the Income and Expenditure Statements of Urban Local Bodies (ULBs), retrieved from the City Finance Portal maintained by the Ministry of Housing and Urban Affairs (MoHUA, 2024). The study period spans four fiscal years (2020–21 to 2023–24), with a particular focus on indicators such as internal revenue mobilization, revenue expenditures, Earnings Before Interest, Depreciation, and Amortization (EBIDA), and debt-servicing capacity.

The financial data were systematically categorized under the National Municipal Accounts Manual (NMAM, 2004), specifically utilizing function codes 110–180 for revenue sources and 210–250, 270–272 for expenditure classifications. The dataset was analyzed using SPSS version 27.0, applying a range of statistical techniques including descriptive statistics, normality tests (Shapiro-Wilk), and multivariate regression analysis. Operating Surplus and the Interest Coverage Ratio (ICR) were employed as the dependent variables, while EBIDA and interest expenses were treated as independent variables.

To further validate the relationship between financial performance and debt-servicing capacity, the study employed supplementary tools such as ratio analysis, Durbin Watson test, and variance Inflation factor to assess auto and multi-correlation. One-Sample Wilcoxon Signed Rank Test, and regression diagnostics. These methods collectively contribute to assessing the fiscal sustainability and bond-readiness of the selected municipal entities.

5. Findings

Sl No.	Name of Municipality	OR (Rs in Cr)	RE (Rs in Cr)	EBIDA (Rs in Cr)	Interest (Rs in Cr)	Operating Surplus (Rs in Cr)	ICR (times)
		(1)	(2)	**3=1-2**	4	**5=3-4**	6=3/4
1	Pune Municipal Corporation	8581.29	7389.60	**1191.69**	15.20	**1176.49**	78.37
2	Indore Municipal Corporation	1513.65	1437.94	**75.71**	33.52	**42.19**	2.25
3	Bhopal Municipal Corporation	877.38	1030.74	**-153.36**	18.34	**-171.71**	-8.36
4	Ahmedabad Municipal Corporation	15243.23	4655.13	**10588.10**	144.91	**10443.19**	73.06
5	Surat Municipal Corporation	3256.13	4691.78	**-1435.65**	40.11	**-1475.76**	-35.79
6	Vadodra Municipal Corporation	980.95	1404.98	**-424.03**	11.75	**-435.78**	-36.09
7	Lucknow Municipal Corporation	488.29	1401.45	**-913.16**	12.76	**-925.92**	-71.57
8	Pimpri Chinchwad Municipal Corporation	2194.59	3905.74	**-1711.15**	22.20	**-1733.35**	-77.08

i. The analysis of municipal financial data, particularly the relationship between Earnings Before Interest and Depreciation (EBIDA), Interest Expense, and the Interest Coverage Ratio (ICR), provides critical insights into the financial strength and debt servicing capacity of municipalities.
   - The Shapiro-Wilk Test results indicate that EBIDA, Interest Expense, and Operating Surplus do not conform to a normal distribution, necessitating the use of non-parametric statistical methods.
   - In contrast, the ICR, derived from EBIDA and Interest Expense, exhibits a normal distribution, rendering it appropriate for correlation analysis using Spearman's rho. Consequently, the null hypothesis positing that the distributions of EBIDA, Interest Expense, and Operating Surplus are normally distributed is rejected.

ii. Spearman's correlation analysis reveals a robust and statistically significant positive correlation between EBIDA and ICR ($\rho = 0.905$, $p = 0.002$), suggesting that an increase in EBIDA is strongly associated with a corresponding rise in the Interest Coverage Ratio. The null hypothesis of no significant relationship between EBIDA and ICR is therefore rejected. This finding underscores that the primary factor driving an enhanced ICR is the increase in EBIDA, rather than variations in Interest Expense. Furthermore, the correlations between Interest Expense and EBIDA, as well as Interest Expense and ICR, are weak and statistically non-significant, indicating that fluctuations in Interest Expense have minimal impact on the ICR within the current dataset.

Summary of Key Findings

Variable	Correlation Coefficient	Statistical Significance (p-value)
EBIDA & Interest Expense	0.190	0.651 (Non-Significant)
EBIDA & Interest Coverage Ratio	0.905**	0.002 (Significant)
Interest Expense & Interest Coverage Ratio	0.333	0.420 (Non-Significant)

iii. The regression analyses were conducted to test the null hypotheses regarding the relationship between Operating Surplus, Interest Coverage Ratio (ICR), EBIDA, and Interest Expense. The results indicated that:

- Operating Surplus is strongly influenced by EBIDA and Interest Expense, but due to perfect multicollinearity, Interest Expense was excluded from the model. The relationship between Operating Surplus and EBIDA was found to be deterministic, i.e., Operating Surplus = EBIDA - Interest Expense.
- Interest Coverage Ratio (ICR) showed a significant positive relationship with EBIDA. The regression equation suggests that for every Rs1 crore increase in EBIDA, ICR increases by 0.011 points.

Model 1: Operating Surplus Prediction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1.000	1.000	1.000	17.39813	–
2	1.000	1.000	1.000	0.00407	1.959

Excluded Variables

Variable	Beta	t-value	Sig.	Partial Correlation	VIF	Tolerance
Interest Expense	–0.011	–10,466.318	0.000	–1.000	7.671	0.130

Model 2: Interest Coverage Ratio (ICR) Prediction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.721	0.520	0.440	44.26129

Coefficients for ICR Model

Variable	B	Std. Error	Beta	t-value	Sig.
Constant	–18.981	16.093	–	–1.179	0.283
EBIDA	0.011	0.004	0.721	2.551	0.043

The regression results demonstrate that EBIDA is a key determinant for both Operating Surplus and Interest Coverage Ratio (ICR), while Interest Expense has minimal impact. Specifically, Operating Surplus follows a deterministic relationship with EBIDA and Interest Expense, while ICR is positively and significantly related to EBIDA, where each ₹1 crore increase in EBIDA results in a 0.011-point increase in ICR**.**

iv. This study employed the One-Sample Wilcoxon Signed Rank Test to evaluate two key financial metrics—Operating Surplus and Interest Coverage Ratio (ICR)—across eight municipalities to assess their financial strength. The null hypothesis posited that the median Operating Surplus is zero, implying a break-even scenario with no financial strength or weakness. The test results yielded a Test Statistic of 14.000, a

Standard Error of 7.141, a Standardized Test Statistic of -0.560, and an Asymptotic Significance (two-sided) of 0.575 (N = 8). The failure to reject the null hypothesis (p = 0.575) suggests that the median Operating Surplus is not significantly different from zero. However, further analysis of the data revealed a median Operating Surplus of -303.745, indicating a net deficit across the sample. Notably, three municipalities—Ahmedabad (10443.19), Pune (1176.49), and Indore (42.19)—exhibited positive surpluses, signifying financial strength, whereas the remaining five—Bhopal, Surat, Vadodara, Lucknow, and Pimpri Chinchwad—displayed negative surpluses, reflecting financial weakness. This distribution highlights that, despite the test's inability to reject the null hypothesis, the overall financial health of the group leans toward weakness, with financial strength limited to a subset of municipalities.

v. The null hypothesis tested was that the median ICR is equal to or greater than 1.5, a threshold established to define a financially robust city. The One-Sample Wilcoxon Signed Rank Test for this metric produced a Test Statistic of 13.000, a Standard Error of 7.141, a Standardized Test Statistic of -0.700, and an Asymptotic Significance (two-sided) of 0.484 (N = 8). The p-value of 0.484 indicates that the median ICR is not significantly different from 1.5, leading to the failure to reject the null hypothesis. *Consequently, the data do not provide sufficient evidence to conclude that the median ICR across these municipalities exceeds 1.5, suggesting that, on average, the cities do not demonstrate robust debt servicing capacity based on this criterion*.

Collectively, these findings indicate a mixed financial landscape among the municipalities, with Operating Surplus and ICR analyses revealing that financial strength is not uniformly present. The positive surpluses in select cities contrast with the broader trend of deficits and an ICR proximate to but not exceeding the robustness threshold of 1.5.

6. Conclusion, Limitations, and Future Research

Based on OS and ICR as per research framework, the municipalities were categorized as follows:

City	Operating Surplus (Rs in Cr)	Interest Coverage Ratio(times)	Financial Position
Ahmedabad	10443.19	73.05	Strong
Pune	1176.49	78.40	Strong
Indore	42.19	2.26	Potentially Strong
Surat	-1475.76	35.79	Moderate
Bhopal	-171.71	-8.36	Weak
Vadodara	-435.78	-36.08	Weak
Lucknow	-925.92	-71.59	Weak
Pimpri Chinchwad	-1733.35	-77.09	Weak

This categorization identifies Ahmedabad and Pune as municipalities with strong financial positions, characterized by high operating surpluses and robust debt servicing capacity**.** Indore is classified as potentially strong, with a high ICR suggesting good debt servicing potential, despite a low operating surplus. On the other hand**,** Bhopal**,** Surat**,** Vadodara**,** Lucknow, and Pimpri Chinchwad face significant financial challenges, with negative operating surpluses and low ICRs, indicating the need for urgent financial interventions. To improve financial stability and access funding like the Urban Challenge Fund, municipalities in weaker positions must focus on revenue augmentation through improved tax collection and better fiscal management, along with expenditure optimization to reduce deficits and strengthen debt servicing capacity.

The study assesses the financial health of eight Indian municipalities that have accessed the capital market through municipal bonds, with a focus on Operating Surplus (OS), Earnings Before Interest, Depreciation, and Amortization (EBIDA), and Interest Coverage Ratio (ICR). Findings indicate a wide variation in financial capacity among the cities. Ahmedabad and Pune demonstrate strong fiscal positions, making them well-positioned to leverage performance-based instruments like the ₹1 lakh crore Urban Challenge Fund (UCF). Indore and Surat show moderate financial strength, while Bhopal, Vadodara, Lucknow, and Pimpri Chinchwad require significant reforms due to weak debt-servicing capacity and negative fiscal indicators.

The analysis reveals that cities with an ICR greater than 1 with positive operating surplus are generally capable of servicing debt at effective rates of 6–7%, like Ahmedabad, Pune, and Surat, making them financially viable for further bond issuances. However, the benefits of municipal bond financing remain concentrated in a limited number of states and cities. To broaden participation under the UCF and improve access to capital markets, MoHUA and state governments must prioritize strengthening municipal finances through enhanced revenue generation, improved tax collection, and expenditure efficiency.

This study, while limited to bond-issuing municipalities, highlights the need for further research comparing these cities with non-issuers and global peers to understand the broader landscape. Key policy reforms in municipal financial management are essential to enhance creditworthiness, fiscal sustainability, and inclusive access to market-based funding for India's 4,800+ ULBs.

Acknowledgement

I extend my deepest gratitude to Dr. Rohit Kumar Shrivastav, Assistant Professor, Department of Commerce, Faculty of Commerce and Business, Delhi School of Economics, University of Delhi, for his invaluable guidance and support throughout the course of my research. I am equally grateful to my Research Advisory Committee (RAC) members, Prof. Amit Singh, Professor, Department of Commerce, Delhi School of Economics, University of Delhi, and Prof. Lovleen Gupta, Professor, Department of Commerce, Hindu College, University of Delhi, for their insightful feedback, encouragement, and constant motivation during the preparation of this paper. I would also like to thank the editorial team of IJIRG for their kind consideration and acceptance of my manuscript for publication.

Conflict of Interest

The Author declares that no conflict of interest exists in this manuscript.

Funding Sources

This research has not received any external funding.

References

[1] Athar, S., White, R., Goyal, H. (2022). *Financing India's urban infrastructure needs: Constraints to commercial financing and prospects for policy action* (pp. 43–45). The World Bank.
[2] Bibhudatta, A., Rathee, D. (2025). *Unlocking green finance for India's urban local bodies through municipal green bonds* (pp. 10–15). Council on Energy, Environment and Water.
[3] Biswas, B., Ghosh, S. (2023). K-means clustering for smart cities: An empirical study in Indian context. *International Journal of Soft Computing and Engineering (IJSCE), 14*(3), 20-26. https://doi.org/10.35940/ijsce.B8114.14030724
[4] Chakraborty, S., Ghosh, S., Agarwal, S., Chakraborty, S. (2021). An integrated performance evaluation approach for the Indian smart cities. *Opsearch, 58*(4), 906–941.
[5] Government of India, Ministry of Finance, Department of Economic Affairs. (2017, September). *Guidance on the use of municipal bond financing for infrastructure projects*. Public-Private Partnership Cell, Department of Economic Affairs.
[6] Jeet, V., Aspal, P. K. (2020). The determinant of financial performance of Indian public sector banks—A panel data approach. *International Journal of Financial Research, 11*(5), 285–295.
[7] Kapoor, G., Pati, P. (2017). *Municipal bond market in India: Discussion paper*. Pahle India Foundation.
[8] Kolte, A., Pawar, A., Rossi, M., Rasal, D. (2022). Analyzing the financial state of selected Indian information technology companies: The assessment towards foreseeing the future of industry. *International Journal of Intellectual Property Management,* 12(3), 281–304.
[9] Kumar, A., Goel, P. (2023). Jharkhand urban local bodies journey of financial sustainability: Nirbhar to Atmanirbhar. *The Chartered Accountant,* 71(11), 52–58.
[10] Ministry of Finance. (2025). *Union Budget Speech 2025–26*. Government of India.
[11] Ministry of Housing and Urban Affairs (MoHUA). (2023). *Urban India Vision 2030: Chintan Shivir outcomes report*. Government of India.
[12] Ministry of Urban Development. (2004). *National Municipal Accounting Manual (NMAM)*. Government of India.
[13] National Commission on Population. (2019). *Population projections for India and states, 2011–2036: Report of the Technical Group on Population Projections*. Ministry of Health & Family Welfare, Government of India.
[14] Pal, N. K., Pathneja, S., Kumar, Y. M. (2018). Performance analysis of banks and microfinance institutions in India. *International Academic Journal of Accounting and Financial Management, 5*(4), 116–128.
[15] Praveena, C. A. K. R. (2023). Be ready to ride the municipal bond wave. *The Chartered Accountant,* 71(11), 78–82.
[16] Reserve Bank of India. (2022). *State of municipal finances in India*.
[17] Reserve Bank of India. (2024). *State of municipal finances in India*.
[18] Sambher, N., D D, S. (2023). How smart are Indian smart cities? A case study of Shimla. *Economic and Political Weekly, 58*(5), 59–64.
[19] Susanne Kranz (2012). Book Review: K.C. Sivaramakrishnan. 2011. Re-visioning Indian Cities. The Urban Renewal Mission, *Journal of South Asian Development*, 7(2), 206-209.
[20] Swalih, M., Adarsh, K., Sulphey, M. (2021). A study on the financial soundness of Indian automobile industries using Altman Z-Score. *Accounting, 7*(2), 295–298.