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Enhancing the Financial Health of Urban Local Bodies by Adoption of Technology and AI in Tax System

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ABSTRACT

India, the fifth-largest global economy, aims to become a USD 5 trillion economy by 2026 and USD 40 trillion by 2047, driven by targeted reforms and rapid urbanization. Cities, contributing nearly 60% to India's GDP, require robust urban infrastructure and governance. Gujarat, a prosperous state in western India, has a higher urbanization rate (~48%) than the national average (~36%). This paper examines Gujarat's urban landscape and the role of Urban Local Bodies (ULBs) in managing socio-economic growth, evaluates municipal finance, and explores how technology can enhance it. Strong financial health is crucial for cities, which function as autonomous bodies responsible for delivering services like water, drainage, transportation, and green spaces. Cities collect various taxes and charges, such as property tax and water charges. Previously, these were collected manually, causing delays and affecting transparency. The e-Nagar portal, launched by the Government of Gujarat, automates these collections, improving transparency, accountability, and efficiency. As technology evolves, governments must adopt new systems, particularly those interacting with citizens. Integrating communication channels like WhatsApp and payment gateways like UPI can enhance citizen engagement. AI and ML can improve user interfaces and administrative efficiency through predictive analytics, identifying discrepancies and leakages. This paper explores AI's role in enhancing municipal finance, leading to effective service delivery, with e-Nagar as the focus. The research is based on secondary data from the Gujarat Urban Development Mission, a Government of Gujarat agency working under the Urban Development & Urban Housing Department.

Introduction

India is currently ranked as the fifth largest economy globally. Medium-term growth projections for the country remain highly optimistic, suggesting the potential to achieve a USD 5 trillion economy by 2026 and USD 40 trillion by 2047. This ambition is driven by various targeted reforms being implemented across multiple sectors such as engineering, IT/ ITeS, power, etc. leading to rapid economic expansion. As India progresses towards this visionary goal, the importance of infrastructure and urban development becomes increasingly evident as a foundational pillar of its success. Urbanization, in particular, is both the outcome and the propeller of this growth.

One of the important sources of urban finance are the taxes and charges collected by the city administration from its residents. These include property tax, professional tax, water charges, sanitation charges, and fees from issuing various certificates like marriage, birth, building permission, etc.

This paper deals with the present status of the tax system of ULBs including selective case studies of how tax is computed, culminating in how technology especially AI can be utilized to improve municipal finance at large right from calculation, information to citizen, and collection.

India's Economic Growth and Urbanization

As per the Census 2011, about 32% of citizens reside in urban areas. (Ministry of Housing & Urban Affairs, 2024) The number of inhabitants in Indian cities increased four-fold between 1970 and 2018, i.e., from 109 million to 460 million. Central Intelligence Agency (CIA) suggests that the level of urbanization in India today stands at around 36.4%.[1] (Factbook, n.d.) India currently houses the second-largest urban community in the world and is expected to add another 416 million to its cities by 2050. This will result in an urbanization level of nearly 50%. (Asian Development Bank, 2022) From a growth propeller point of view, cities are considered major drivers. In India alone, cities contribute nearly 60% to the GDP. (Nations, 2018)

However, to sustain this growth and ensure the continued development of its major cities, it is crucial to enhance its urban administrative system's technical, financial, and managerial capacities. Urban financing is one of the most important aspects of sustainable urban development. As of now, ULBs are heavily dependent on grants from state or central governments for funding various developmental projects in their jurisdiction. The structure of several marquee urban schemes like AMRUT 2.0, and Smart City Mission also has a significant portion of fund contribution either from the state government or the central government. This contribution of funds either by state or the central governments is even larger for smaller cities reflecting the latter's limited capacity to raise funds or contribute funds from its treasury towards developmental works.

A holistic approach is thus essential for use of technology & innovation for managing municipal finance in urban centers to make them resilient and sustainable.

Overview of Municipal Finance in India

Cities in India are financially liberated and can collect charges and generate income from various sources. Below is the institutional structure of how municipal finance is operated in India sourced from the RBI.

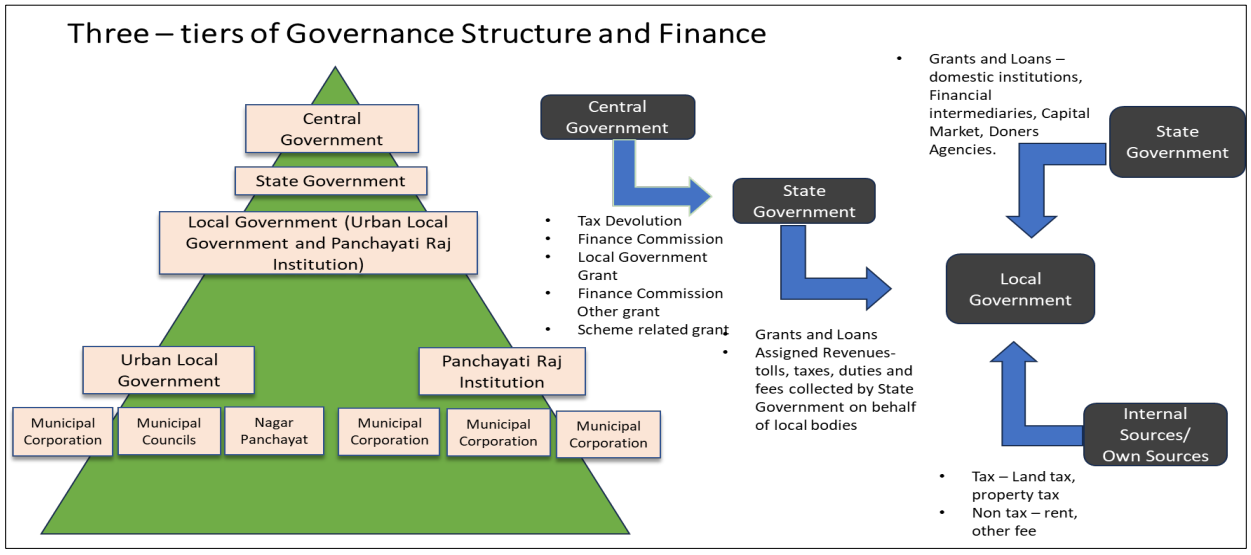

Figure 1. Three-tiers of Governance Structure and Finance

Property tax, professional tax, and other user charges are the main sources of revenue for the ULBs. It is estimated that in India, the aggregate revenue of ULBs from their own sources of revenue is less than Rs. 1,50,000 Cr. (Sanghi, Priyadarshini, & Singh , 2011)This amounts to less than 1% of the national GDP as compared to 6% in Brazil and South Africa. (India, 2007) Property tax is the major contributor to ULB's sources of revenue. Property tax typically constitutes the largest share of revenue for Urban Local Bodies (ULBs), often contributing over 50% of their total income. This revenue is crucial for funding essential municipal services and infrastructure development.

Institutional Structure of Municipal Finance

The revenue income of cities is divided into tax revenues, non-tax revenues, revenue grants, contributions & subsidies from central and state, and other income (rental income, income from sales and hire charges, income from investments, and interest earned).

Below is the class-wise segregation of revenue generated from various sources:

1. **Sources of Tax Revenue** • Property Tax • Water Tax • Sewerage Tax • Drainage Tax • Professional Tax • Advertisement Tax • Entertainment Tax	2. **Grants from Central & State Government** • Grants from the Union/ Central Government • Grants from State Government • Central Finance Commission grants • State Finance Commission grants • Centrally Sponsored Schemes grants • Transfers under State schemes • Central sector scheme grants • Other state transfers (combined) • Other central transfers (combined)
3. **Non – Tax Revenue** • Fees & user charges from Water supply • Fees & user charges from Sewerage • Fees & user charges from Garbage collection / Solid waste management • All other fees & user charges (combined)	4. **Assigned Revenue** • Compensation in lieu of Octroi • All other assigned revenues & compensation (combined)
5. **Rental Income from Municipal properties**	6. **Other income** (incl. Sale & Hire charges Income from Investments Interest earned etc.)

Importance Of Municipal Finance for Sustainable Urban Development

In India, the cities are administered and governed by their respective Urban Local Body (ULB) which comprises administrators as well as elected members. These ULBs must be financially sustainable to effectively respond to urbanization by way of infrastructure development and provision of continuous quality services.

Urban Local Bodies (ULBs) can improve their financial management through several strategies. Prioritizing the increase of their own-source revenue generation is key, which can be achieved by optimizing property taxes, improving collection mechanisms, and adjusting fees for essential services like waste management, parking, and licenses. Fiscal decentralization is crucial for empowering ULBs with the authority to manage and collect revenues locally, reducing bureaucratic barriers, and enhancing financial accountability. Involving private players in the collection and recovery of charges and fees can also be beneficial. Additionally, exploring innovative financing options such as municipal bonds, green bonds, and asset monetization can provide new revenue streams. Capacity-building initiatives aimed at enhancing the financial management skills of ULB staff are essential for efficient revenue

collection and expenditure management. Technological solutions, including AI, ML, and predictive analytics, offer affordable and scalable options for effective financial management, from tax calculation to collection to identifying leakages. Moreover, the use of GIS-based property mapping can help identify new properties and defaulters, further improving revenue collection.

The subsequent sections of this paper will highlight the level of urbanization in Gujarat state, its efforts towards improving the financial health of 165 ULBs through technological advancements, and offer further suggestions for enhancing these initiatives to ensure sustainable urban development.

Gujarat's Urbanization Landscape

Overview

Gujarat's urban area is divided into 165 ULBs comprising 157 Municipalities and 8 Municipal Corporations. These 165 ULBs house nearly 48% of the state's 6 crore (60 million) population. In 2011, this number stood at 42.58% which was higher than the national average of 31.16%. However, the major proportion of the urban population (more than 52%) was residing only in four larger cities of Ahmedabad, Surat, Vadodara, and Rajkot in 2011. (Frontiers, 2023)

Each city in Gujarat has its unique identity. For example, Ahmedabad and Surat have historically been centers of trade and industry, with Ahmedabad renowned for textiles and Surat known as the Diamond City. Vadodara excels in petrochemicals and engineering, supported by strong educational institutions. Rajkot thrives in the engineering and automotive sectors, while Bhavnagar focuses on shipbuilding and chemicals, leveraging its strategic port. Anand is synonymous with Amul dairy, a cornerstone of India's dairy sector, and Jamnagar hosts one of the world's largest oil refineries, bolstering the state's energy sector. Together, these cities drive Gujarat's diverse economy encompassing manufacturing, agriculture, and services.

Urban Governance in Gujarat

Urban governance in Gujarat is a complex system involving multiple layers of administration and governance structures.

The primary entities responsible for urban governance include the Urban Development & Urban Housing Department (UD&UHD), the Regional Commissioner of Municipalities, Municipal Corporations, and Municipalities. These bodies work together to ensure effective urban planning, development, and service delivery to the urban population across the 165 ULBs of the state.

Urban Development & Urban Housing Department (UD&UHD)

The UD&UHD of Gujarat is the apex body responsible for urban planning, policy formulation, and overall governance in urban areas. It oversees various urban local bodies including Municipal Corporations, Regional Commissioner of Municipalities and Municipalities. The department's responsibilities include urban infrastructure development, housing, sanitation, and implementation of central and state urban schemes.

Regional Commissioner of Municipalities (RCMs)

The 157 municipalities of the state are geographically divided into 6 zones based on their location. These zones are Ahmedabad, Surat, Vadodara, Rajkot, Bhavnagar, and Gandhinagar. Each zone is headed by a Regional Commissioner of Municipalities.

The Regional Commissioners of Municipalities in Gujarat play a vital role in overseeing and coordinating the functions of municipalities across the state to ensure effective governance, regulatory compliance, and policy

implementation. Key responsibilities include supervising municipal operations, implementing government schemes, providing administrative support, ensuring financial oversight, facilitating capacity building, and resolving conflicts.

Municipal Corporations

Gujarat has 8 Municipal Corporations as autonomous bodies with the authority to govern, plan, and execute urban development projects. These Corporations usually administer areas with population of more than 0.5 million. These Corporations are established to manage the complex needs of urbanization and ensure the efficient delivery of services and infrastructure development. They function under the provisions of the Gujarat Municipal Corporation Act 1949. Key municipal corporations in Gujarat include those in Ahmedabad, Surat, Vadodara, and Rajkot. Municipal Corporations are responsible for urban planning and land use management, provision of civic amenities such as water supply, sewerage, and sanitation, and maintenance of public infrastructure including roads, parks, and public buildings. It is also responsible for welfare schemes, implementation of projects, collection of taxes, and revenue generation among other responsibilities.

Municipalities

Municipalities are local self-government bodies that administer urban areas with populations ranging from 15,000 to 1 lac (0.0 million) or more, but usually less than 0.5 million. These are smaller than Municipal Corporations. The state's 157 Municipalities are categorized into 4 groups based on population size. There are 22 Class A municipalities, 31 Class B municipalities, 59 Class C municipalities, and 45 Class D municipalities. They are governed by the provisions of the Gujarat Municipalities Act, 1963. Some of the key functions of Municipalities are the management of local infrastructure and public services, implementation of state and centrally sponsored schemes, collection of property tax and other local revenues, and ensuring public health and sanitation.

Other Agencies

Several authorities/ agencies work with the above-mentioned bodies (like RCM, etc.) in project implementation, policy formulation, grant management, etc. Some of these agencies include Gujarat Urban Development Mission (GUDM), Gujarat Urban Development Company Ltd (GUDCL), Gujarat Housing Board (GHB), Gujarat Municipal Finance Board (GMFB) etc.

Key Services Provided by ULBs

As per Article 234 of the Constitution of India, Gujarat Municipal Corporation Act, 1949, and Gujarat Municipalities Act, 1963, Urban Local Bodies (ULBs) in Gujarat are mandated to provide a range of essential services to the residents within its jurisdiction, including infrastructure development, public health, sanitation, water supply, education, and social welfare. The services provided by ULBs in Gujarat include:

a. Infrastructure development
b. Building Permission
c. Property tax collection
d. Public Health and Sanitation
e. Water Supply and Sewerage
f. Revenue Generation and Financial Management
g. Fire and Emergency
h. Social Welfare and Education

To improve the efficiency of revenue collection and enhance service delivery, Gujarat Urban Development Mission (GUDM) developed the e-Nagar Portal. This portal leverages IT solutions to streamline processes, increase

transparency, and ensure accurate assessment and collection of municipal revenues. The following section explores the e-Nagar portal in detail, highlighting the various modules and services it offers. (GUDM, 2024)

e-Nagar Portal

e-Nagar Portal has been initiated by the Urban Development and Urban Housing Department, Gujarat with Gujarat Urban Development Mission (GUDM) as the nodal agency. The project has brought the essential citizen-centric services and solutions of the ULBs on a centralized platform. There are 9 modules which provide 41 services. The modules are namely:

a. Property Tax,
b. Water & Drainage,
c. Hall Booking,
d. Complaint & Grievances,
e. Building Permission,
f. Estate Management,
g. Marriage Registration,
h. Professional Tax and,
i. Licenses

The project has catalyzed urban transformation and enhanced ease of living for citizens. It is a technology-based platform that has transformed the way citizens perceive administrative machinery. The solution is scalable and replicable.

Below is the graph showing the collection under 3 major contributors of own revenue via the e-Nagar portal between 2019 and 2024.

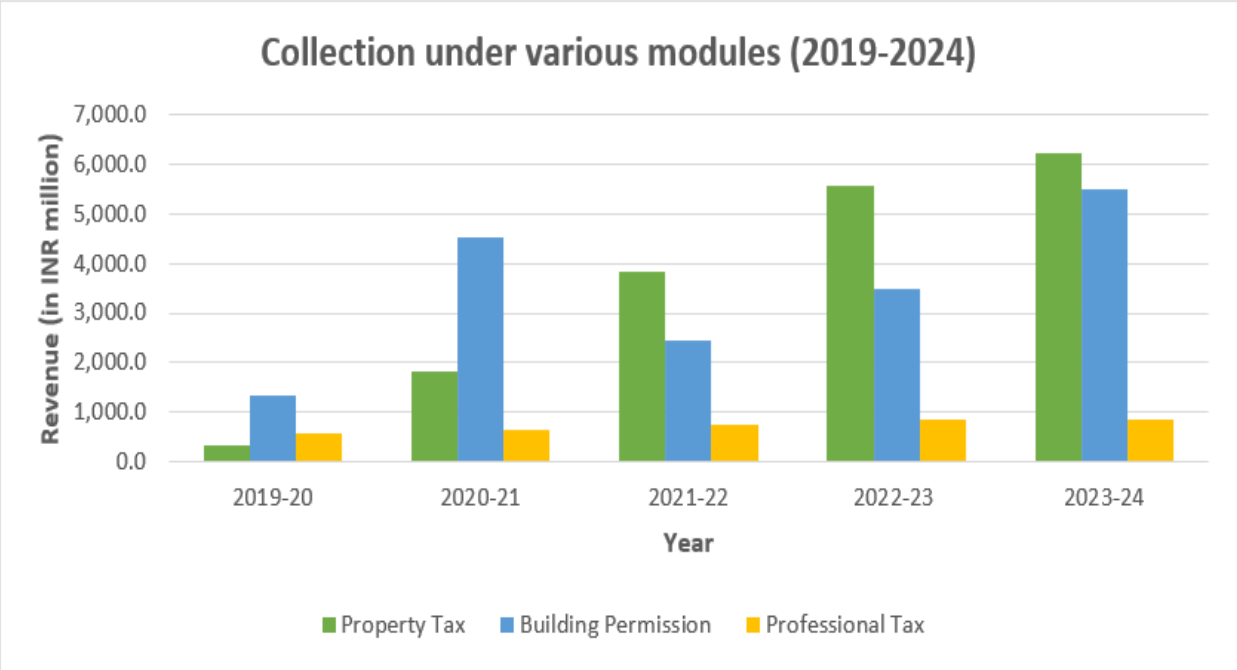

Figure 2. Collection under various modules of eNagar
Source: eNagar Cell, Gujarat Urban Development Mission

Over the past seven fiscal years, revenue collection through the portal's modules—namely property tax, building permission, and professional tax—have been the primary source of revenue generation, contributing nearly 98% of the total own income of the ULBs. The overall trend has shown a consistent increase, except for the year 2021-22 due to COVID-19 relief packages.

Property Tax

The calculation of property tax involves several key factors as per the amendments made in 2007 and 2008. These include the property area in square feet, location factor, usage factor, age of the property, and occupancy factor. Additionally, the basic rate varies by the class of municipality and property type. Special conditions apply for properties over 40 square meters and certain non-residential uses. These factors are combined in a formula to determine the property tax amount, ensuring a comprehensive approach to tax assessment. Detailed calculations with formulae for calculation of the property tax for residential as well as non-residential buildings are added in **Annexure 1.** Property tax analysis is considered since it contributes the most among all the sources of own revenue for the ULBs.

Analysis of Property Tax

In the context of Gujarat, the chart below presents an analysis of property tax over the last five fiscal years (2019-20 to 2023-24) viz, gap in collection and demand. This analysis focuses on the Municipal Corporation of Gandhinagar, the sole corporation in Gujarat that manages its property tax collection through eNagar, as well as all other 157 Nagarpalikas/ municipalities. (eNagar Gujarat, 2024)

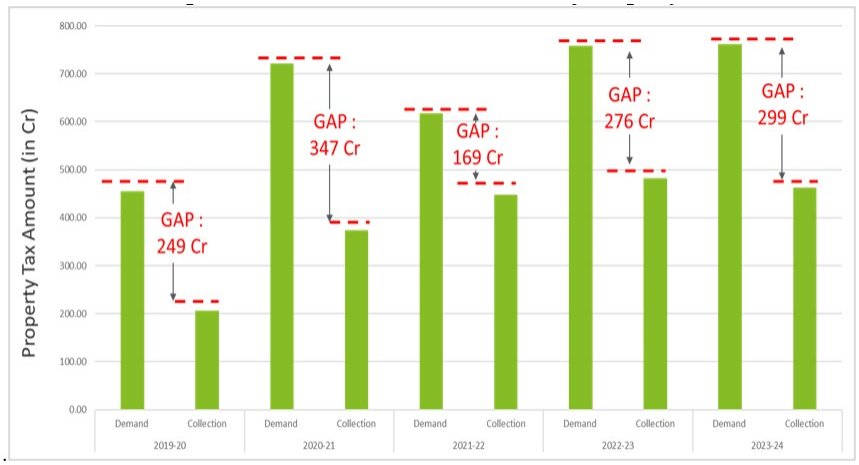

Figure 3. Gap between Demand and Collection (Property Tax)
Source: eNagar Cell, Gujarat Urban Development Mission

There is a consistent gap between the property tax demand and collection across all the fiscal years represented (2019-20 to 2023-24). These gaps highlight significant shortfalls in the collection compared to the demand, which suggests inefficiencies or obstacles in the tax collection processes. The fluctuations indicate variability in collection efficiency or possibly changes in policy like tax rebates, etc. The property tax demand and collection both show an increasing trend over the years, indicating a growing property base or improved tax assessment methods.

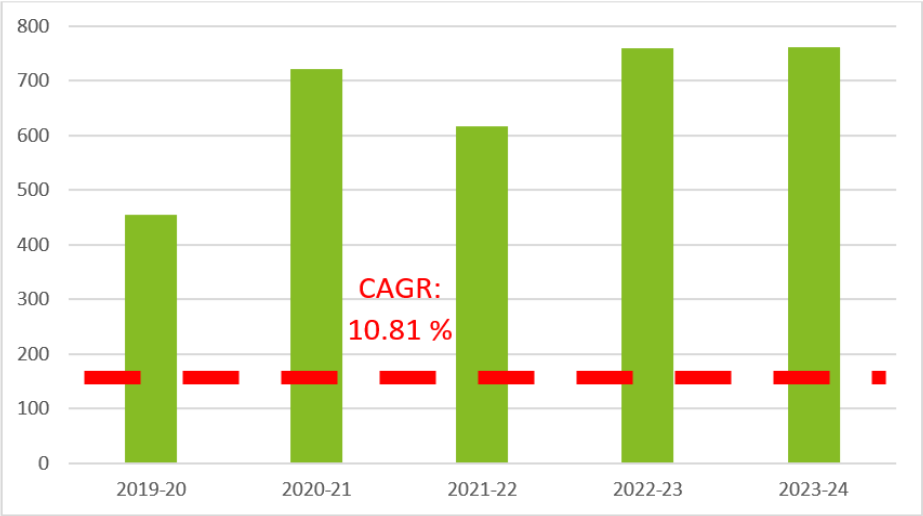

Figure 4. Demand generated for Property tax (2019-2024)
Source: eNagar Cell, Gujarat Urban Development Mission

Over the past four years, property tax demand has exhibited a compound annual growth rate (CAGR) of 10.81%. Notably, the third year (2021-22) experienced a significant decline of 14%, while the fourth year saw a substantial increase of 22% in property tax demand. The sudden decrease witnessed in the annual demand during the fiscal year 2021-2022 could be attributed to the rebates and waivers offered by the state government as a part of the relief packages post-COVID-19. Furthermore, there is a high degree of increase witnessed in the trend in the subsequent fiscal years which can be attributed to the volatility seen in property valuations, economic fluctuations, or changes in tax policy.

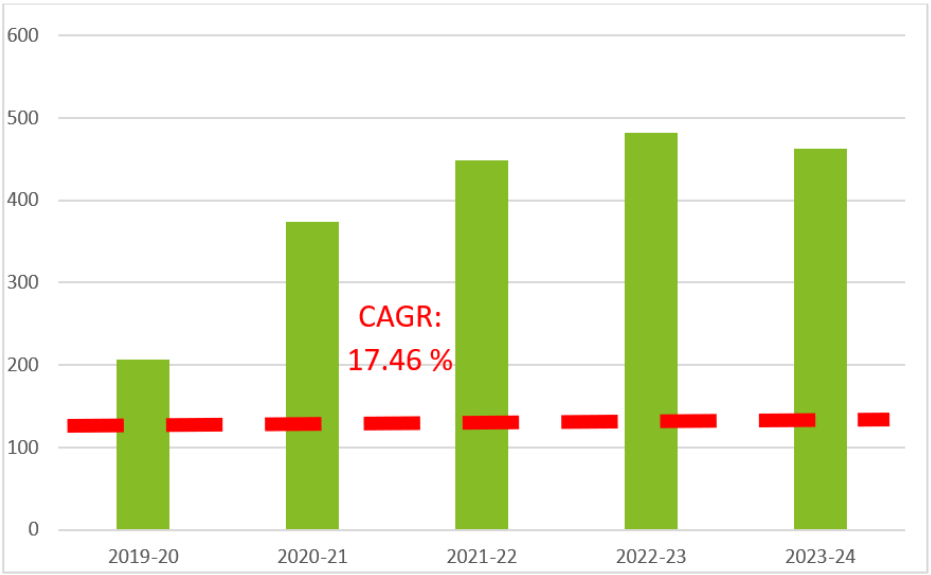

Figure 5. Collection of Property tax (2019-2024)
Source: eNagar Cell, Gujarat Urban Development Mission

Over the past five years, property tax collection has demonstrated a compound annual growth rate (CAGR) of 17.46%. However, the fourth year (2023-24) saw an overall decline of 4% in total property tax collection. This could indicate varying economic conditions or changes in collection efficiency. Municipal corporations followed with a CAGR of about 15%, exhibited strong performance in recent years, particularly in 2022-23, which could be attributed to improved collection mechanisms or economic factors favoring higher tax compliance. Whereas Nagarpalikas showed more consistent and aggressive tax collection efforts with a CAGR of about 17.7%, exhibiting a better performance in comparison to the Municipal Corporation.

Present Tax System Challenges

In numerous urban local bodies (ULBs), the property tax system faces significant issues that make it less effective. These include:

- Property tax rates and assessment methods don't get updated regularly to match current property values and economic conditions. Even the assessment process itself is manual, which makes it time-consuming and costly. This lack of adjustment means that tax assessments often don't match the real market value of properties, leading to differences and potential loss of revenue. Without updates, the system becomes outdated and can't adapt to changes in the property market.
- Another major issue is the complexity of the assessment processes. ULBs use complicated methods to assess property values based on factors like location, size, usage, and construction quality. Gathering detailed data for these assessments is hard to do and maintain. The manual process involves multiple departments, leading to inconsistencies and delays. Limited staff and technology make it even harder to do accurate assessments.
- Managing property data is tough, and the lack of standardization causes confusion and inefficiencies. This complexity leads to many appeals and disputes, requiring more resources and making the system more complicated.
- Transparency is also a problem that undermines the property tax system. Property owners often struggle to understand how their taxes are calculated. The process's opacity can lead to distrust and reduced compliance. When taxpayers don't understand how their tax liabilities are determined, they're less likely to pay willingly. This lack of transparency can make property owners feel like the taxes are unfair and arbitrary. Building trust in the system needs clear communication about how tax rates are set, and assessments are done.
- Another critical challenge is the inadequate use of modern technology, which worsens these problems. Many ULBs don't use advanced technological tools in their property tax administration. This lack of technology integration leads to inefficiencies and higher costs. Modern technology can simplify various parts of the property tax process, from assessment to collection. For example, Geographic Information Systems (GIS) can provide accurate property mapping and valuations, while online payment portals can make collecting taxes easier. However, since many ULBs don't use these technologies enough, they continue to struggle with inefficiencies and higher costs. (Officials, 2024)
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Addressing these issues may require updating tax rates and methods regularly, simplifying assessment processes, improving transparency, and integrating modern technology. By doing so, ULBs can create a more efficient and effective property tax system that benefits both the municipalities and property owners.

Suggested Technological Interventions in Urban Governance

Online Portal for Updation of Property Tax Register

Developing a centralized online portal for updating the Property Tax Register (PTR) that integrates with Building Use (BU) approvals and sub-registrar offices [2] will offer several benefits. This portal will enable property owners to register properties online in the property tax register, allowing users to fill out forms, upload documents, and receive confirmation notifications. It will automatically transfer data from the sub-registrar office to the PTR upon completion of registration, reducing the need for manual intervention and helping identify the real property owner, notifying them about tax dues. Additionally, the portal will provide real-time data updates, ensuring that any changes or updates to property information are immediately reflected across all integrated systems, including the property tax register.

Integration Of Property Tax Register with Building Use (BU) Approval System

Integrating the property tax register with the Building Use (BU) approval system using an automated workflow engine will create a seamless process. This integration will combine the property tax register and BU approval into a unified application process, ensuring properties are registered in the PTR and assessed correctly before occupation begins for new properties. Real-time data sharing between the property registration system and the tax database will ensure consistency in property data and reduce discrepancies, streamlining the entire process.

GIS Mapping of Properties in ULB

Use GIS technology to help in the identification of properties that are not in the tax net of ULBs. Once all such properties are identified using GIS data and PTR, AI can identify those properties that are not in the tax net. Tax authorities of ULBs can further take necessary action to bring all such properties into the tax net.

Document Management and Security

Developing a robust digital document management system to handle all property-related documents will offer significant advantages. This system will provide secure storage, ensuring that sensitive information is protected. Additionally, it will allow authorized personnel to access and retrieve documents easily, facilitating efficient processing and verification.

Enhanced Data Analytics and Reporting

Implementing advanced analytics tools to monitor and analyze property registration, Building Use (BU) approvals, and mutation trends will enhance the system's efficiency. These tools will enable real-time reporting, providing insights into property registration patterns, BU approvals, and mutation activities. Trend analysis will help identify areas for improvement and implement strategies to enhance efficiency and effectiveness. Additionally, the AI tools can identify habitual tax defaulters, allowing for the issuance of notices and, if necessary, the initiation of penal actions to collect taxes from these individuals.

Training and Capacity Building

Providing comprehensive training programs for municipal staff is essential for the effective use of the new IT systems. Staff should receive thorough system training to become proficient in using the centralized portal, document management system, and analytics tools. Continuous education opportunities will be offered to keep staff updated on new features and best practices. Additionally, workshops and informational sessions will be conducted for property owners to familiarize them with the new processes. User guides and video tutorials will be developed to assist property owners in navigating the online portal and understanding the integrated registration and Building Use (BU) approval processes. Support services, including live chat and a helpdesk, will be set up to assist property owners. The system will also be validated with existing data and building use permissions to ensure accuracy and consistency.

2 A sub-registrar office is a government entity tasked with registering property-related documents and ensuring legal compliance in real estate transactions.

Real-Time Notification System

Implementing a real-time alert system is essential to keep property owners and municipal staff informed about the status of validation checks, upcoming deadlines, and necessary actions. This system can send notifications through various channels. Email updates will provide regular alerts, ensuring that property owners and municipal staff stay informed about the progress of validation checks and upcoming deadlines. SMS and WhatsApp will deliver important reminders and urgent notifications, providing timely information even when recipients are not actively checking their email. Additionally, push notifications via a dedicated mobile app will offer real-time updates on validation status and required actions directly to smartphones, ensuring immediate access to critical information and facilitating prompt responses to any issues or deadlines.

Identification Of New Properties Using AI Tools, Satellite Imageries

Identification of new properties through the utilization of AI tools and satellite imagery represents a cutting-edge approach to property management. By harnessing the power of artificial intelligence and remote sensing technology, Urban Local Bodies (ULBs) can efficiently identify and track new properties within their jurisdiction. This process involves implementing AI algorithms capable of analyzing satellite imagery to detect changes in land use patterns and identify potential new properties. These tools utilize machine learning techniques to recognize distinct features associated with buildings and structures, enabling automated property identification. High-resolution satellite imagery is leveraged to capture detailed snapshots of urban landscapes, providing valuable insights into the spatial distribution of properties and allowing for the identification of new developments and changes in land use over time. Integrating AI-powered property identification tools with geographic information systems (GIS) enhances the accuracy and efficiency of property identification efforts, enabling seamless data integration with other administrative systems.

Identification Of Areas Where the Collection Is Low Historically

Identifying areas with historically low tax collection rates is crucial for Urban Local Bodies (ULBs) to prioritize resource allocation and implement targeted interventions to improve revenue generation. This process involves conducting comprehensive data analysis of historical tax collection records to pinpoint neighborhoods with consistently low collection rates over time, considering factors such as demographic profiles, economic indicators, property values, and tax compliance patterns. Utilizing Geographic Information Systems (GIS) technology enables spatial visualization of tax collection data, identifying spatial patterns of low collection areas by overlaying this data with demographic and land-use information. Comparative analysis across different administrative zones, wards, or neighborhoods within the ULB's jurisdiction can highlight areas where tax collection rates significantly lag behind others, indicating potential areas for targeted intervention. Additionally, analyzing socioeconomic indicators such as income levels, unemployment rates, poverty incidence, and property ownership patterns can help identify areas with underlying socioeconomic challenges that contribute to low tax collection rates. Trend analysis of temporal tax collection rates can further identify areas where collection rates have consistently declined or remained stagnant over time, guiding ULBs in identifying regions requiring immediate attention and intervention.

Proposed Enhancement to the Existing e-Nagar Portal

To enhance the effectiveness and user experience of the e-Nagar portal, several high-level changes and improvements can be implemented:

i. User-Friendly Interface

Simplify the portal's interface to make it more intuitive and user-friendly. Streamline navigation by organizing sections and features logically. Incorporate clear instructions and tooltips to guide users through the portal's functionalities.

ii. Back office Mobile App

Introducing a back-office mobile app for eNagar can streamline administrative tasks, improve efficiency, and enhance communication between municipal staff and citizens.

iii. Enhanced Search Functionality

Improve the search feature to allow users to easily locate specific information, such as property records, permits, or payment options.

Include filters and advanced search options to refine search results based on various criteria, such as location, property type, or date.

iv. AI-based report and dashboards

Implementing AI-based reporting and smart dashboards in e-Nagar with predictive analysis can provide valuable insights, improve decision-making, and enhance overall efficiency.

v. Real-Time Notifications

Introduce real-time notification features to alert users about important updates, such as property tax deadlines, permit approvals, or service status changes.

Allow users to customize notification preferences and receive alerts via email, SMS, or mobile app notifications.

vi. Grievance Mechanism

Implement an improved feedback mechanism to gather user input and suggestions for improving the e-Nagar portal.

Encourage users to submit feedback, report issues, and suggest new features to enhance their overall experience.

Integration With Other Government Portals

Integrating the e-Nagar portal with other government portals can enhance its functionality and interoperability, allowing for seamless data exchange and collaboration across different government departments and agencies. These departments include:

- Revenue Department
- Electricity Department
- Police Department
- GSTIN and PAN Card Verification
- AADHAAR Database Integration
- PM Gati Shakti Portal Integration

Conclusion

Gujarat's urbanization is integral to India's rapid economic growth, highlighting the crucial role of infrastructure and urban development. Effective governance frameworks supported by UD&UHD, RCMs, Municipal Corporations, and Municipalities are essential for driving economic progress in major cities. Addressing challenges in municipal finance, particularly property tax systems, and embracing innovations like the e-Nagar portal and API integrations are pivotal in ensuring sustainable urban growth through enhanced governance and strategic investments.

Acknowledgments

I would like to express my sincere gratitude to Puna International School and its Principal, Sadhana K, for their invaluable support and encouragement throughout this research. I also extend my heartfelt thanks to the Gujarat Urban Development Mission (GUDM) e-Nagar cell for their assistance in procuring the necessary data, which was crucial

for this study. Their contributions and cooperation have been instrumental in the successful completion of this research.

Annexure 1 – Calculation of Property Tax

Amendment: 2007

Dated July 11, 2007, According to Clause 99 – K (1) Property Tax calculation based on Carpet Area is as follows:
The Calculation of Property Tax formula: Area of property in Square Foot * F1 * F2 * F3 * F4 or F4A (in case of Non-Residential property)

- Properties greater than 40 square meters - the rate should be increased every two years by 10% for properties greater than 40 square meters.
- Property with an area of less than 40 meters square and 25 meters square - the Nagarpalika shall decide the rate; subject to state government approval.

Residential Property

The following table indicates the factor (F1) value depending on the location of the property:

Table 1. Location Factor and Value for Residential Property

Location Factor	Value
A (Developed Area)	1.25
B (Mediumly developed)	1.00
C (Poor Areas)	0.75

The following table indicates the factor (F4) value depending on the Usage of the property:

Table 2. Usage Factor and Value for Residential Property

Type of Property		
Sr. No	**Usage Factor**	**Value**
1	Independent Bungalow	1.25
2	Tenement/ Row House	1.00
3	Flat	0.75
4	Pol / House in an Urban Area	0.75
5	Chali / Open plot	0.50
6	Ex-Service Men	0.25

Non-Residential Property

The following table indicates the Factor (F1) value depending on the location of the property:

Table 3. Location factor and Value for Non-Residential Property

Location Factor	Value
A (Developed Area)	1.50
B (Mediumly developed)	1.25
C (Poor Areas)	1.00

The following table indicates the Factor (F4A) value depending on the Usage of the property:

Table 4. Usage factor and Value for Non-Residential Property

Non-Residential Properties	
Usage	**Value**
Banks, petrol pumps, go-down-warehouses, offices of commercial and industrial units, consultants/experts, multi-purpose commercial sales centers, mobile phone towers and their offices etc.	4
Shops, hotels, restaurants, entertainment centers, cinemas, garages, service stations, lodging boardings, club houses, hospitals, dispensaries, maternity hospitals, any kind of laboratory, tuition coaching classes, skill schools, etc.	3
Industrial Establishment	
Industrial units and factories (only manufacturing and processing buildings): For built up area of 1 to 100 sq. m	2
Industrial units and factories (only manufacturing and processing buildings): For built-up area of 101 to 250 sq. m.	1.5
Industrial units and factories (only manufacturing and processing buildings): For built up area of 251 to 500 sq. m	1.25
Industrial units and factories (only manufacturing and processing buildings): For built-up area of 501 to 1000 sq. m	1
Industrial units and factories (only manufacturing and processing buildings): For built up area exceeding 1001 sq. m	0.75
Open plot	0.5
Educational and Social Institutions Government and Semi-Government, Private Bal Mandir-Kindergartens, Private-Government Schools/Colleges, Community Halls, Madrasas, etc.	1
Hawada, Nahwana Ghat, Water Parb, Panjarapol, Gaushala, Social Institutions run by Public Charitable Trusts, (like Nari Sankshan, Old age home (Gharda Ghar), Behera Munga, Andh Apang Gah and Bhikshuk Gah, all providing free treatment	0.75
Temple, Mosque, Derasar, Chach, Roza, Tomb, Gurudwara, Apasara, Dargah, Agiyari, Samadhi, Graveyard, Cemetery, Crematorium etc.	0

Residential and Non-Residential Property

The following table indicates the Factor (F2) value depending on the Age of the property:

Table 5. Age factor and Value for both Residential and Non-Residential Property

Sr. No	Construction Age	Value
1	Till 20 years	1.00
2	20 years – 40 years	0.75
3	More than 40 years	0.50

The following table indicates the Factor (F3) value depending on the Occupancy factor:

Table 6. Occupancy factor and Value for both Residential and Non-Residential Property

Residential & Non-Residential property		
Sr. No	**Construction Age**	**Value**
1	Self	1.00
2	Tenant	1.25

Amendment: 2008

Dated April 1, 2008, the base rate value was mandated for the calculation of the property tax:

The Calculation of Property Tax formula: R* Area of property in Square Foot * F1 * F2 * F3 * F4 or F4A (in case of Non-Residential property)

Where, R = Basic Rate of the Property Tax (Depends on the rates decided by Nagarpalika)

Table 7. Basic Rate calculating property tax for both Residential and Non-Residential Property

Rate of Tax on Buildings and Land				
Class of Municipalities	**Residential Buildings**		**Buildings other than the residential Buildings**	
	Min Rate in Rs per Sq. m	Max Rate in Rs per Sq. m	Min Rate in Rs per Sq. m	Max Rate in Rs per Sq. m
A	5	10	8	15
B	4	8	6	12
C	3	6	5	10
D	2.50	5	4	8

Dated May 12, 2008, for non-residential properties, the property has been bifurcated as per Usage.

Table 8. Usage factor for Non-Residential properties

Non-Residential Properties	
Usage	**Value**
Party Plot	1
Dharamshala provides social services then the factor value will be considered for social Institution	0.75
Dharamshala provides commercial activities such as lodging and boarding	3

Registered trust institutions such as: Educational Institutions, Properties where cultural activities take plus without any means for commercial use, Panjra Pol, Women's protection, old age homes, Deaf/ mute/blind/handicapped and beggar institutions, Hospital providing services at low cost, Library, Cow Shelter, Water parab, and any other social organization which operates on - no profit and no loss organization	0.25
Ex-servicemen/ or their widows and martyred soldiers or their widows and wherever they are residing in the State	0.25

For an empty property, the property tax value will be calculated as 60% less than the actual tax value, with the condition that the property should not consume more than 25 units of electricity.

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