



## **PUBLIC PRIVATE PARTNERSHIP (PPP) IN PUBLIC TRANSPORT SYSTEM: A CASE STUDY OF HYDERABAD**

**Dr.E.Laxminarayana**

*Associate Professor of Public Administration, Government Degree College, Yellareddy, Kamareddy  
Telangana.*

### **Abstract**

*A long-term agreement between a private company and a government agency for the provision of a public good or service, wherein the private company assumes a large amount of risk and management responsibilities and payment is contingent upon performance. Includes PPPs that offer associated services and new and existing assets. Includes PPPs where service consumers pay the private party in full and those where some or all of the payments are made by a government agency. Includes contracts for a wide range of services and sectors, as long as the project contains long-term assets related to the PPP contract's long-term nature and there is a public interest in providing these services. In quickly expanding cities, urban mobility is essential to social inclusion and economic growth. In order to improve the quality of urban life, minimize environmental effects, and lessen traffic congestion, public transit systems are essential. An effective multimodal transportation system is necessary for these public transit systems to integrate seamlessly between various modes. Hyderabad is the subject of this study due to its growing status as a "economic powerhouse." The city's public transportation system is confronted with several difficulties, such as inadequate multimodal integration, gaps in last-mile connectivity, and a growing reliance on private vehicles. Public transportation uptake has been hindered by inefficiencies in fare integration, service coordination, and institutional governance, despite expenditures in metro rail, busses, and suburban trains. The present paper will focus on functioning of Public transport system in Greater Hyderabad.*

**Key words:** *Public Private Partnership, Urban Mobility, Public transport system, Hyderabad, Governance.*

### **Introduction**

A long-term agreement between a private company and a government agency for the provision of a public good or service, wherein the private company assumes a large amount of risk and management responsibilities and payment is contingent upon performance. Includes PPPs that offer associated services and new and existing assets. Includes PPPs where service consumers pay the private party in full and those where some or all of the payments are made by a government agency. Includes contracts for a wide range of services and sectors, as long as the project contains long-term assets related to the PPP contract's long-term nature and there is a public interest in providing these services. The project functions transferred to the private party such as design, construction, financing, operations, and maintenance—may vary from contract to contract, but in all cases the private party is accountable for project performance and bears significant risk and management responsibility.

Major issues facing Hyderabad's public transportation system include inadequate multimodal integration, gaps in last-mile connectivity, and a growing reliance on private vehicles. Public transportation uptake has been hindered by inefficiencies in fare integration, service coordination, and institutional governance, despite expenditures in metro rail, busses, and suburban trains. This study uses secondary literature, bibliometric analysis, and expert interviews to investigate these barriers. The results emphasize the necessity of more robust regulatory monitoring, smooth intermodal transfers, and better last-mile solutions.



Although the study is focused on Hyderabad, the recommendations can be applied based on the context with the aim of elevating the entire public transport network to the service levels of the metro, which are widely regarded as aspirational in terms of efficiency, reliability, and commuter experience. This is because Hyderabad is recognized by Knight Frank India as the fastest-growing city in India.

In quickly expanding cities, urban mobility is essential to social participation and economic growth (Solanki et al., 2015). In order to improve the quality of urban life, minimize environmental effects, and lessen traffic congestion, public transportation systems are essential (Lako & Gjevori, 2023). An effective multimodal transportation system is necessary for these public transit systems to integrate seamlessly between various modes.

Hyderabad is the focus of this research because of its rising prominence as an “economic powerhouse” (The New Indian Express, 2023) and the growing challenges of urban mobility that come with “population boom” (Singh, 2024). Public transportation in Hyderabad, like in most cities in India (Choudhary, 2023), has not been fulfilling its intended purpose of providing efficient urban mobility. The number of private vehicles in the Greater Hyderabad Municipal Corporation (GHMC) area has risen sharply, leading to worsening congestion, air pollution, and a decline in overall urban mobility. A report from Telangana’s Road Transport Authority (RTA) in 2023 indicates that in the Greater Hyderabad Municipal Corporation (GHMC), “the number of two-wheelers and four-wheelers increased from 39.5 lakh to 56.9 lakh and from 9.2 lakh to 14.1 lakh, respectively, between 2017 and 2023” (The Times of India, 2023). The two metro lines of the Hyderabad Metro Rail Limited (HMRL) became operational in 2017 followed by the third metro line in 2020 (Swarajya, 2020). However, the data presented above on the increase in number of private vehicles during this time period clearly shows that the metro network has not achieved its goal of providing an efficient public transport system.

This inference is reinforced by Singh (2015), who states that people tend to shift to private modes of transportation when public transportation systems do not meet their needs. This growing reliance on private transport highlights the urgent need for a more efficient public transit system. Despite its potential, Phase I of the metro network, which spans 69.2 kilometers, faces challenges, with a lower daily ridership than the projected ridership at the 11 project's inception (Paul Oommen, 2022). In addition to the metro network, Hyderabad also struggles to address public transport needs through road-based transit, specifically the city bus services provided by the Telangana State Road Transport Corporation (TGSRTC). A report by the Times of India notes that TGSRTC operates around 3,000 buses in the GHMC area, compared to the required 6,000 buses for the city (Jose, 2022). Studies indicate that public transport adoption is directly influenced by factors such as affordability, reliability, ease of transfer, and service quality (Litman, 2024). However, Hyderabad’s public transport ecosystem suffers from operational inefficiencies, an aging bus fleet, and limited integration between different transport modes (Mohammed, 2024). As a result, commuters often resort to private vehicles, exacerbating road congestion and diminishing the intended benefits of large-scale transit investments.

### **Public Transportation in Hyderabad**

For the purposes of this study, the Telangana State Road Transport Corporation (TGSRTC, formerly TSRTC), the Multi-Modal Transport System (MMTS), which is the Local Train network, and the Hyderabad Metro Rail Limited are the three modes of public transportation in Hyderabad. They are essential to the city's mobility, serving millions of commuters every day. 1.1.1 Telangana State Road Transport Corporation (TGSRTC) An essential part of Hyderabad's everyday travel is the state-run bus service TGSRTC. There are over 2,800 busses in the city that transport a sizable portion of the



populace. But many of the fleet's busses are getting close to the end of their useful lives, which raises questions regarding dependability and safety (Mohammed, 2024).

Beyond infrastructure 12 concerns, the demand for TGSRTC services has surged. Ridership grew from 4.3 million in 2022 to 6 million in 2025, marking a nearly 40% increase. A major contributor to this spike was the introduction of a free bus travel scheme for women in December 2023, which significantly boosted female ridership from 2.7 million to 3.5 million daily (Baski, 2025). However, the total fleet size has remained largely unchanged at around 9,384 buses statewide, resulting in overcrowding and extended wait times, particularly during peak hours. Commuters frequently report delays of 15–20 minutes, often causing late arrivals. To address this, TGSRTC has set ambitious goals rolling out 3000 electric buses for the city, starting with an initial batch of 500 (Baski, 2024). The state government has put itself a target for an entirely electric bus fleet within the next few years, a step toward sustainable urban transport.

1.1.2 Multi-Modal Transport System (MMTS) Designed to improve connectivity between Hyderabad and its suburbs, the MMTS suburban rail network started in 2003 now covers 123.52 km across multiple routes, few of them include Hyderabad(Nampally)–Lingampalli, Hyderabad(Nampally)–Falaknuma, and Secunderabad–Bollaram. For years, MMTS has been a lifeline for suburban commuters, but recent trends indicate a sharp decline in both ridership and service levels (Baski, 2024a). Following the pandemic, daily ridership dropped dramatically from above “160,000 to just 40,000” making the South-Central Railway (SCR) to cut daily services from “121” to “100”. Many commuters have cited frequent delays, cancellations, and extended halts as reasons for shifting to alternative modes of transport (Baski, 2024a). Plans to expand MMTS to Shamshabad (RGIA) and Ghatkesar-Yadadri routes remain stalled due to funding delays. The Ghatkesar Yadadri extension, sanctioned in 2016-17 for ₹430 crore, is still awaiting the state government’s ₹290 crore contribution, leaving commuters in these areas with limited rail options (Baski, 13 2024b).

1.1.3 Hyderabad Metro Rail Limited (HMRL) The Hyderabad Metro, one of India’s largest metro networks, was developed with an investment of ₹22,148 crores. Phase 1, which spans 69 km across three corridors, has significantly improved urban mobility, and the upcoming Phase 2 aims to add another 116.2 km. Additionally, the government has proposed extending the network by 45 km to northern areas like Medchal and Shamirpet, further strengthening connectivity and easing congestion (Hyderabad Metro Rail Limited, 2024). The statement highlights that 63.5 crore passengers have used the metro from its commencement while maintaining an impressive 99.8% punctuality rate showing its reliability and efficiency.

### **Transport policies in India**

India’s urban population accounts to 36% in 2023 according to world bank urbanization prospects data increasing from 31.6% in 2011 according to Ministry of Housing and Urban Affairs. Urban transportation in India is grappling with the pressures of rapid urbanization, rising vehicle ownership, and fragmented public transport systems. As cities grow denser, ensuring smooth connectivity across different modes of transport is crucial to ease congestion and make urban mobility more sustainable. The government policies in the recent past have an integrated approach from isolated projects with a goal to create public transport a preferred choice for mobility. The National Urban Transport Policy (NUTP) in 2006 highlighted the importance of moving people rather than vehicles. Though the policy set a vision for multimodal integration, it failed to bring in strategies to integrate various modes - metro rail, bus services, and non motorized transport (NMT) - cycling and walking infrastructure (Verma et



al., 2021). The Smart Cities Mission in 2015 also introduced transport solutions to improve urban mobility, but in practice, many cities still struggle with uncoordinated and disjointed public transport networks. Metro Rail Policy in 2017 is one of the crucial points in urban mobility. The policy has led to expansion of metro rail networks in Indian cities. 21 Indian cities till date compared to five in 2014 (Mishra, 2024) have invested capital in Metro Rail system over other transit systems. The Central Government in August 2024 approved combined investment of “INR 30,000 crore for Bengaluru, Pune and Thane metro projects which are expected to complete by 2029” adding to the present length of metro under construction throughout the country to “1018 Kms” which makes to around “2000 Kms” when operational surpassing the USA (Mishra, 2024). Apart from the positives of moving large number of people and providing efficient transit, metro rails often struggle to reach their full potential due to weak first mile and last-mile connectivity.

Well planned feeder bus services, pedestrian-friendly infrastructure, and cycling lanes play a major role for maximizing accessibility to metro (Verma et al., 2021). Figure 2 Projected and Actual Ridership in India (Mukherjee et al., 2023) Non-Motorized Transport (NMT) is an often-overlooked important aspect in Indian public transportation scenario. Pedestrian pathways and cycling infrastructure are crucial in making public transport more accessible reducing public reliant on private motorized vehicles. Studies show that cities with good NMT infrastructure have higher ridership across public transport modes (Verma et al., 2021). But the Indian urban transport policies though talk about the importance of these modes, that hasn't turned into reality while allocating resources to NMT, leading to its present situation in Hyderabad and most of the Indian cities. Despite all the advancements, institutional coordination remains a major hurdle to achieve multimodal integration. The Unified Metropolitan Transport Authority (UMTA) was introduced under the National Urban Transport Policy (NUTP) to streamline planning and operations across transport agencies. This had a weak implementation due to bureaucratic inefficiencies and jurisdictional conflicts (Verma et al., 2021). Without stronger institutional mechanisms any effort to integrate different transport modes will always lead to a system that is still fragmented and ineffective. Kingdon's Multiple Streams Framework (Kingdon, 1984) is adopted with an additional technology stream, to get the understanding on how the technological innovation with electric vehicles can be leveraged for policy development. This approach is to examine how policy windows open not just from problem, policy, and political streams, but also from dynamic technological activities such as R&D, market creation, and adoption patterns that influence and are influenced by policy choices (Voß 2007; Elzen et al. 2011; Goyal et al. 2021). Similarly, Christopher Hood's NATO framework (Hood, 1983) is used for structuring the recommendations as this framework gives a comprehensive understanding of what kind of tools are to be used for policy formulation. The primary motivation of this study is to explore ways to enhance the effectiveness of the current public transportation system in Hyderabad, focusing on both the operational metro network and the proposed metro network under Phase II, which includes an additional “116.2 kilometers of metro lines” (Kaushik, 2024), TGSRTC services, and surface rail system (MMTS/ Local trains). Current limitations in “lack of integration”, between the three modes of transportation, issues with “last mile connectivity” (Krishna & Chattaraj, 2020) have hindered the metro rail's success in effectively addressing the public transportation in Hyderabad.

## Literature Review

Efficient Multimodal Public Transportation The construct - Efficient Multi Modal Public Transportation is derived greatly from the research by Litman (2024), Poojani & Stead (2016) and Hensher & Rose (2006). These studies were considered as they provide a comprehensive view of multimodal transportation and with evaluation methodologies considering the challenges and policies





concerned to develop as well as developing countries. They have shown this construct to encompass five main pillars – “Availability and Coverage”, “Accessibility”, “Reliability” and “Affordability”, “Ease of Transfer”. Availability and Coverage refers to the extent to which public transportation options are available both with respect to time as well as geographical reach that people can access it when and where they need it. A good public transportation system will have buses, metro rail, and other transit options being able to serve a wide geographic area and operate at according to preferred time of commuters. When public transport is readily available, people are less likely to depend on private vehicles. The research by Tanwar & Agarwal (2024) found that cities with well-connected public transit networks see a significant drop in personal vehicle use, as residents have reliable alternatives for commuting. The research employed a three-step method for assessing multimodal transportation system trip time performance by identifying factors, generating various individual indices, and evaluating the Multimodal Transport System Travel Time Performance Index. Accessibility is mainly about the ease with which commuters are able to use public transportation, not just physical infrastructure or with respect to ingress or egress to a mode of transportation but also in terms of information. Can commuters easily find a bus stop or metro station? Are schedules and routes clearly communicated? Gahlot et al. (2013) emphasized that cities that improve accessibility see an increase in ridership, as more people find public transport convenient and user-friendly. For people to trust and depend on public transport, it needs to be consistent. When the preferred commute option runs on time, commuters can plan their journeys with confidence. But unreliable service with frequent delays, cancellations, or long wait times can push people toward private vehicles. Mwaka et al. (2023) found that when public transport users frequently face delays, they are more likely to switch to personal cars or two-wheelers. Reliable systems, on the other hand, build trust and encourage long-term public transport use. Cost plays a major role in public transport usage. If ticket prices are too high, people, especially those from low-income groups may not be able to afford regular travel. On the other hand, reasonably priced fares make public transport a viable choice for all economic groups. Yang et al. (2020) highlighted that affordable public transport helps people, especially low income to access better job opportunities thereby improving their quality of life. An efficient multimodal system makes it simple and convenient for commuters to switch from one mode of transport to another whether it is transitioning from a metro to a bus or using last-mile connectivity options like auto-rickshaws, ride hailing services or feeder buses. Tanwar & Agarwal (2024) have shown that the cities with well-integrated transit systems have higher public transport adoption rates. The first mile and last-mile connectivity in Indian cities, has been fortunately bridged by the Para transit options like shared Autorickshaws, ride hailing platforms in the recent past and 24 by very limited feeder or shuttle services. Very few cities like Delhi and Ahmedabad have taken steps to address this crucial gap to improve transfers. For example, the Delhi Metro has integrated feeder buses and auto-rickshaw stands, and the Bus rapid transit (BRT) in Ahmedabad offers designated spaces for auto-rickshaws and bicycles to make transfer between different modes easier (Goel & Tiwari, 2016). The mobile applications providing real-time updates on bus and metro schedules (Vyas & Patel., 2024) also help commuters plan their journeys better, reducing the uncertainty and making public transport a better option. For a city’s public transport system to be an efficient one, all the mentioned factors must align. When implemented right, a well-integrated multimodal transport system can reduce traffic congestion, cut down on pollution, and improve overall urban mobility, making cities more livable and sustainable.

### 3.2 Recent studies on public transportation system in India.

The latest research on multimodal public transportation in India were studied. The studies in this section were considered as they contextualized the necessity and gave the perspective on Indian specific challenges and the policy needs. They highlight the importance of existing institutional



structures, infrastructural development needs and technological adoption for a better integrated public transportation system. Chadalawada (2022) investigates on various strategies to improve public transport by seamless integration of various modes of transport in the context of smart cities in India. He considered buses, trains, bicycles, and shared mobility options as the transport modes in his work. The research showed the importance of a cohesive transportation ecosystem for a convenient commute for the user. The methodology employed analyses the urban transit models 25 with the case studies of four cities: Tokyo, Singapore, Berlin, and San Francisco. Various metrics such as Average Travel Speed, Passenger Load Factor, Coverage Area, Accessibility Index, and Emission Reduction Rate were used to analyze the performance of multi-modal systems in these cities. The findings highlight that successful integration of multi-modal transportation is based on three factors - robust infrastructure, adaptive technology, and coordinated governance. The study also emphasizes on the utilization of real time data to enhance the responsiveness of transit systems. The study by Dawda (2024) highlights that the public transportation planning in Indian cities has historically been focused on private vehicles and rail-based systems neglecting bus transit, which led to a fragmented system. The research investigates the role of para-transit services which is often an overlooked aspect in terms of first and last-mile connectivity. The study utilizes data on urbanization trends, vehicle registration, road accidents, travel speeds, air quality, and ridership of different public transport modes. The recommendations include the need for a more balanced approach in investment, advocating for optimizing the bus networks and a better integration of para-transit services with public transport. The study emphasizes the necessity of establishing comprehensive institutional frameworks to develop urban mobility system to address the diverse needs of India's rapidly growing cities. Similarly, the work by Desai & Dawda (2024) addresses the challenges and proposes solutions for creating efficient, sustainable, and user-friendly public transport systems in urban India through integration across institutional, operational, informational, and fare aspects. The methodology involves qualitative analysis based on expert opinions, case studies, and the evaluation of existing systems and global best practices. The key findings emphasize the critical need for Indian cities to transition towards integrated and sustainable multimodal transport systems to address the challenges posed by rapid urbanization and increasing demand for efficient public transport. It stresses the importance of Unified Metropolitan Transport Authorities (UMTAs) in fostering coordination and integration. The need for integrating informal public transport, addressing the mobility needs of women and marginalized groups, and importance of fare and information integration of various models are also highlighted. Mukherjee et al. (2023) conducted a three-city survey of 7,200 metro commuters in India to understand current metro user demographics, last-mile choices, and preferences. The study revealed that Indian metro systems attract young (19–35), middle-income commuters with monthly household incomes between INR 10,000 and INR 40,000 (\$121.26–\$485.06 USD as of June 12, 2023). The study also found that affluent users are not attracted to the system, and low-income users are priced out of it. The study highlights that the Indian metro commuters are highly sensitive to last-mile wait times and costs. Women are especially averse to waiting and may opt for more expensive services to avoid waiting. This study emphasizes prioritizing high-frequency, low-cost shared services and improving pedestrian infrastructure around metro stations. It suggests that last-mile planning should be based on spatial demography around stations, driving last-mile service design from a commuter-oriented perspective, and mandating a clear, periodic last-mile data-gathering process. The research also found that metro users primarily walk or use low-cost shared last-mile modes, which is likely due to the demographic's high price sensitivity that makes more costly on-demand last-mile modes unviable. Also, users, especially women, are averse to waiting for last-mile modes, and a last-mile mode whose frequency exceeds 10 minutes is unlikely to be preferred. They are willing to travel up to 20 minutes to access metro stations, including the time spent waiting for last-mile modes. This



figure is consistent across cities and income groups, 27 indicating that the “catchment region” of a metro station is determined more by access time than by a fixed area. (Mukherjee et al., 2023) The study by Tejaswi et al. (2024) using Structural Equation Modelling in Hyderabad found that inadequate first and last-mile connectivity contributes to low occupancy in new mass rapid transit systems, highlighting its significant impact on mode choice. This research analyzed the causal relationships between trip chaining and mode choice, revealing that for work trips using active or public modes, the decision-making process is simultaneous, emphasizing the importance of seamless connectivity. Mukherjee et al (2023) found that poor access to metro stations is a primary reason for underutilization, with commuters seeking improvements in feeder service frequency, waiting times, and fares. This suggests that addressing these last-mile factors is crucial to attract commuters to public transport over private vehicles in Hyderabad. Sagar & Ghuge’s (2015) work on public transport in Hyderabad points to a lack of coordination between different modes like buses and the MMTS. This study identified that many passengers already undertake modal shifts, indicating a need for better integration. To improve this, the research suggests enhancing connectivity between bus routes and MMTS stations, introducing dedicated feeder bus services synchronized with train schedules, and utilizing information technology to provide integrated information to commuters. These practices, derived from surveys and analysis of existing transport scenarios in Hyderabad, aim to create a more seamless and attractive transport system. Learning from cities with successful multi-modal systems highlights the importance of integration across various levels. Singapore's synchronized MRT and bus services with a unified payment system demonstrate the effectiveness of operational and fare integration. Bogotá's BRT system with its "trunk and feeder" route approach offers a model for efficient network integration (Dawda, 2025). Applying these lessons to Hyderabad would involve focusing on better 28 coordination between existing modes, implementing a unified ticketing system, and optimizing route networks to improve commuter convenience and encourage public transport usage.

NATO Framework for Recommendations to arrive at the policy insights and recommendations, this study relies on NATO (Nodality, Authority, Treasure, and Organization) model proposed by Christopher Hood and the individual tools are explained in *The Tools of Government in the Digital Age* (Hood & Margetts, 2007). This model gives a framework to understand government instruments for policy implementation. “Nodality” refers to the government's role in the collection and dissemination of information effectively. The state can influence public behavior and policy outcomes through communication strategies (Hood, 1983; Hood & Margetts, 2007). “Authority” is about governments' legal and regulatory powers to mandate or prohibit actions. Through legislation and regulations, authorities can enforce compliance and direct societal behavior (Hood, 1983; Hood & Margetts, 2007). “Treasure” denotes the financial resources available to governments, 30 such as taxation, subsidies, and grants. By allocating or withholding funds, governments can incentivize or disincentivize specific behaviors and support policy objectives (Hood, 1983; Hood & Margetts, 2007). “Organization” is related to the internal resources and capabilities of the government, including its agencies, personnel, and infrastructure. Through organizational capacity, governments can directly provide services and implement policies (Hood, 1983; Hood & Margetts, 2007). As the multimodal transportation is with inbuilt complexities this model gives insights on what policy recommendations can be implemented for the overall goal to enhance efficiency of transportation system. Though not under the NATO model, several studies have shown the importance of policy various policy instruments that are to be implemented for better transportation systems in urban agglomerations. Hood’s NATO model helps in giving a comprehensive view through which these instruments can be categorized and implemented. Previous research on public transport efficiency by Desai & Dawda (2024) mentions about the role of



regulatory interventions and financial incentives in shaping transport accessibility and reliability. The study on smart mobility by Banister (2008) mentions about leveraging real-time data and digital infrastructure to improve system integration which is a nodality-based policy tool.

### **Relevance of the Study and Existing Research Gaps**

This research addresses critical gaps in the existing research on public transportation planning and implementation of Hyderabad, by focusing on enhancing the effectiveness of existing public transportation through the integration across different modes. This research could influence decision-makers and relevant stakeholders to adopt transformative solutions that not only improve urban mobility but also contribute to resilient transport network for Hyderabad. Most of the existing literature focuses on improving operations of individual mode of transportations in Hyderabad. The study by Krishna and Chattaraj (2020) evaluates the public transportation of Hyderabad using VISUM software to identify key performance indices and to propose new bus and metro routes to improve accessibility and to reduce congestion. Sagar and Ghuge (2015) emphasize the need for integrating different modes of transportation by effective use of information technology to understand passenger movement. The study by Tejaswi et al. (2024) uses Structural Equation Modeling (SEM) and confirmatory factor analysis. It identifies different decision-making patterns for work and non-work trips. While this research is important to understand travel behavior, it concentrates on individual-level decision-making rather than systemic improvements in transport infrastructure or service integration.

The reports UITP Case Study (2019) and Hyderabad Metro Rail Limited (2024) highlight the efforts made by agencies like L&T Metro Rail Hyderabad and HMRL to enhance multimodal connectivity through physical infrastructure, technological solutions, and service-level integrations. Though these initiatives show practical progress, they are in descriptive, implementation-focused formats and lack evidence-based research on their effectiveness. These show that there is limited research on a broader policy front on multimodal public transportation system in Hyderabad. Though the studies on individual modes shed light on individual aspects of mobility, there is a gap in research in assessing the impact of these multimodal strategies on commuter behavior, inclusivity, or long-term sustainability outcomes. Addressing this gap is crucial for informing data-driven policies and guiding investments that can enhance the efficiency and sustainability of public transport in Hyderabad. Adding to the above, this study also explores how the adoption of electric vehicles (EVs) can be leveraged for improving public transportation use. The report by International Energy Agency (IEA) (as cited in Chaturvedi et al., 2022) says that “By the end of 2019, India reported a cumulative diffusion of 11,200 electric cars, representing just 0.1% market share.” But the Press Information Bureau has released statement saying “With the launch of the National E-Mobility Programme, the government has set ambitious goals to accelerate the adoption of electric vehicles (EVs), targeting more than a 30% market share by 2030” (Press Information Bureau, Government of India, 2018, as cited in Chaturvedi et al., 2022). This makes it imperative to explore the impact of the EV adoption on the public transport usage for urban agglomerations. The connection between enhancing multimodal public transportation and adopting electric vehicles (EVs) in paratransit and state-operated bus services - TGSRTC in Hyderabad, is an unexplored area with regards to improving city’s public transport ecosystem. Integrating EVs into the overall public transportation system is a necessary, but not a sufficient condition. Factors like institutional coordination, urban planning, and the financial outlay for infrastructural development, etc., are necessary for overall improvement. The complexities of integrating informal transport services and the nascent nature of EV infrastructure have contributed to this gap. This study tries to contribute to this space with the latest development of reliable EV technologies and push from governments both at the central and state levels with policies incentivizing electric vehicles for public transportation. The





central aim is to understand how this integration can significantly improve the quality of these services, potentially elevating the overall public transport scenario in Hyderabad to levels comparable with the metro rail, contributing to a more sustainable and efficient urban transport system for the city.

5. Methodology This research adopts multi method qualitative research approach based on inductive logical reasoning with the central phenomenon being “enhancing multi modal public transportation in Hyderabad”. The research will commence with analysis of secondary research followed by expert interviews to gather comprehensive insights on the existing barriers for efficient multi modal transportation in Hyderabad. Secondary analysis helps in establishing existing knowledge and patterns from previous research adding to the Bibliometric Analysis which is to identify the trends in academia on the construct and helps in providing an objective view of how the field has evolved without any bias.

## Conclusion

With the most recent advancements in dependable EV technology and the efforts of both federal and state governments to implement regulations that encourage the use of EVs for public transportation, this study aims to contribute to this field. In quickly expanding cities, urban mobility is essential to social inclusion and economic growth. In order to improve the quality of urban life, minimize environmental effects, and lessen traffic congestion, public transit systems are essential. An effective multimodal transportation system is necessary for these public transit systems to integrate seamlessly between various modes. Due to its growing status as a "economic powerhouse," Hyderabad is the subject of this study. The city's public transportation system has numerous difficulties, such as inadequate multimodal integration, gaps in last-mile connectivity, and a growing reliance on private vehicles. Public transportation uptake has been hindered by inefficiencies in fare integration, service coordination, and institutional governance, despite expenditures in metro rail, busses, and suburban trains.

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