

# EXECUTIVE SUMMAARY

---

## ***“Transport is Civilization”***

***- Rudyard Kipling***

The majority of the world's population lives in a city, and this proportion continues to grow. As per World Bank, 66% of the world's population is expected to be urban dwellers by 2050 (United Nations, 2014). For cities to grow it is necessary that robust public transport network is created to support expansion and growth. An efficient public transport is backbone of urbanization. Urban transport is not only to move passengers from one point to another but citizens should have convenient, safe and affordable means to travel from their residences to offices, schools-colleges, markets, places of religion as well as entertainment and to fulfil host of social and professional needs.

Growing urbanization in India and increasing contribution of urban population to the country's GDP have brought the quality and quantity of urban infrastructure into focus. The trend towards enhancing livability quotient of India's urban dwellers and at the same time making Indian cities smart and productive has introduced new thinking and skills in managing the urban infrastructure. Young India spends a considerable productive time in commuting to educational institutes and offices. Promoting sustainable transport is prerequisite for economic growth, environmental protection and energy security. Growth of private vehicles has resulted in chaotic road traffic conditions in India's densely populated cities. Building more roads would be akin to loosening the belt for tackling obesity. While Delhi's experience with 231 kilometres of metro line demonstrates that availability of metro alone is not adequate to desist car owners to switch to public transport, there is no denying the fact that Delhi metro has made life a lot easier for commuters especially lower and middle class. It has also provided a safe mode of travel to a big commuter segment of women.

Metro system has become a sort of status symbol. There is competition among states and cities to announce metro projects. Budgetary resources allocated to approved projects, operational or under construction sum up to more than `2.30,000 crores. India definitely needs to speed up building metro systems in Indian cities but not at the cost of priority sectors such as health, sanitation and education which compete for budgetary resources and cannot be overlooked for allocations.

In spite of service backlogs and budgetary constraints of central and state governments and willingness as well as capability of the private capital to undertake rail based urban mass transit system projects, not enough public private partnerships (PPP) are taking off in such projects required to improve urban mobility for socio economic development of Indian cities. The metro track planned/constructed under PPP/private comes to only approx 12.3% by track length and 9.3% by project cost.

12<sup>th</sup> five year plan recognising this impasse has rightly advocated “Given the huge requirement of capital and willingness as well as capability of the private capital to undertake urban transport project, promoting PPP could be a key priority. All metro projects which are in high density corridors, and are viable on their own (with admissible Viability Gap Funding and real estate development on land ordinarily required for the project) may be encouraged under PPP mode “(12th FYP).

However interestingly 12<sup>th</sup> five year plan has also raised a doubt on the success of a PPP metro “A study of the global experience in urban rail transit by the working group on Urban Transport for 12<sup>th</sup> Five Year Plan has stated that PPPs have not been very successful; the analysis of metro rail systems in 132 cities in the world provides for comprehensive understanding of the ownership structure and use of PPP in metro rail development. In 113 cities having metro rails, 88% have been developed and being operated in public sector mode where only in 12% cities some form of public private partnership exists”. (WG 12th FYP, 2011)

Since PPP’s in infrastructure construction was not evolved or was still

evolving when most of the metro lines included in the study were constructed, this analysis by working group can hardly be a damning critique. There are successful metro projects built on PPP framework such as Beijing Line 4, South Korea line no 9 and Gautrain in South Africa. Moreover, even where PPP models have not fared well in metro projects, would pure public sector models have fared better?

The policy makers and city planners need to appreciate that another disappointment with a PPP metro projects like the Delhi airport metro express line fiasco would discourage private investment and will also result in higher cost of future PPP metro projects. A public private partnership in a metro project is no different from say, an airport where public infrastructure is created by a private party under long term concession agreement for providing service. Delhi and Mumbai airports stand testimony to success of such partnerships. In the final analysis, it boils down to specifics of a particular metro project. How the private partner has understood and evaluated the risks in a metro project and how effectively it has been able to factor it into bid price is important. Equally important is the public authority's inclination, competence and determination in fair evaluation of such proposals and take them forward continuously innovating to resolve the problems in implementation typically encountered in any complex PPP project such as a metro system.

Critical success factors influencing the success of a PPP metro project have assumed significance in the realm of PPP infrastructure research in India. A PPP metro project is a complex bundle of contractual arrangements involving multi-parties. Understanding the critical success factors that influence each stage of a metro project and addressing the related strategic issues is imperative to the growth and sustainability of public private partnerships in rail based metro systems in India. Thus, there is a need to focus on these factors contributing to the success of a PPP metro and develop a set of coherent strategies to manage them. To sustain and meet the demands of aspiring Indian cities and to face the challenges of improving urban mobility in an environment friendly way, the stakeholders need to address the strategic

issues related to success factors and create a robust, sector specific PPP framework, which will deliver superior value proposition to creation of metro systems in India.

The present study has been carried out in the context of Indian metro sector by taking the sample of respondents belonging to public and private sector with experience in metro/railway projects.

The primary aim of the research study was to establish qualitatively and quantitatively the critical success factors, impacting the success (CSF) of public private partnerships for rail based urban mass transit systems in India (PPP in metro system) and the degree of the impact of CSFs based on which a conceptual framework could be developed.

A metro project passes through three distinct phases; preparation or contract, implementation and post-implementation phase. How well the PPP deal or package is structured, selection of consortium, signing of contract agreement and the private consortium achieving financial closure are indicators of successful completion of first stage. Implementation success criteria assesses the project through the implementation phase, how well the project is implemented and delivered as per contract specifications in terms of scope, time-lines, quality etc. After commissioning of the metro project, its operation, maintenance and service quality determine satisfaction of users and impacts ridership. For a sustainable performance over the concession agreement it is imperative that metro achieves ridership to make operations viable and the project earns fair return on capital.

The study has established eighteen critical success factors and using quantitative techniques groups them under seven macro factors. These seven factors are further divided into 'external' or 'internal' factors which impact the success of a PPP metro in Indian context. External factors are: socio-political-environment, stable macro-economics and institutional legal framework and government support and internal factors; good governance, effective procurement, well Structured PPP Project and PPP Implementation Processes. These factors were tested in real life settings of Hyderabad metro in a field study.

‘Government support’ is crucial to success of a metro system built on a PPP framework. Central government’s support is reflected in policy stimulus for encouraging private investment, establishing norms for eligibility of viability gap funding, institutional and legal framework and approval procedures for sanctioning rail based mass rapid transit systems on PPP framework. It is the state government which has to take into account the local socio-political ethos and carefully assess the challenges in implementing a metro project on PPP basis. A good ‘techno-feasibility study’, and ‘stakeholder consultation’ will not only help in well structured contract but will also attract private sector investment as the sector attaches great significance to these factors in the success of such a project.

State government also has to set up a team of dedicated and competent professionals to run special purpose vehicle (SPV) and delegate adequate powers for decision making. Formation of an SPV is mandatory for government’s approval of a metro project irrespective of mode of financing. A ‘strong, capable and well organized public agency’ or the SPV which will structure and implement a PPP metro project has emerged as the most significant variable in contributing to the success of each stage of a metro project and was validated in real life case of Hyderabad metro in the first two stages of the project.

The state government has to demonstrate principles of good governance in its dealings which should reflect in the affairs of the public agency dealing with PPP metro.

‘Well structured contract’ is another variable, the significance of which was evidenced in all stages of the study. The findings are in agreement with world bank and United Nations (ESCAP) guidelines on PPP implementation referred earlier in literature survey which highlight the importance of public agency in taking “the steps by which PPP projects are identified, developed, appraised, implemented and managed” (World Bank,2014) and in “finalizing terms of contract, bid document, bid evaluation criteria, draft contract/concession agreement, service and output specification, mechanism for monitoring and control as well as for dispute resolution.”(ESCAP, 2011)]

The structuring of PPP project with proper risk evaluation and appropriate risk sharing, supported by a robust concession agreement and backed up by institutional and legal framework can attract a competent and strong concessionaire if the selection process is fair and transparent. The public agency's role in scoping and structuring the project and its structure can hardly be overemphasized and has been corroborated through Hyderabad case study.

No significant difference in the perception of private and public sector in India was observed during the study on the significance of critical success factors which impact the success of a PPP metro in Indian context in case of majority of factors. However, in case of five factors namely; 'stable macro-economic environment', 'techno-economic feasibility of the project', 'good governance', 'government support and guarantee' and 'strong consortium' the perception of the two sectors as to their relative significance differ. Private sector attaches relatively higher significance to stable macro-economic environment, techno-economic feasibility of the project, good governance, government support and guarantee than private sector. On the other hand a 'Strong consortium' is ranked higher than private sector as a significant contributor of the success of a PPP metro in India.

Strong consortium and 'structuring of project' through 'proper risk allocation' appear to be a common factor in many earlier studies on CSFs in PPP projects too. The public agency can practice and should be seen as practicing 'good governance'. 'Effective procurement' to select a 'strong consortium' is an outcome of transparent and fair procurement process. 'Government support' and perception of 'good governance' instils confidence among private investors. As has been seen in case of Hyderabad metro, a technically strong party with project management skills plays most significant role in technology selection, innovations in design and engineering of the project bringing in benefits to the public utility infrastructure that might not have been available had the project been executed as a government project.

Earlier studies have brought out that "social barriers can be a big hindrance to PPP projects both before and after the award of contract". (Babatunde & et al, 2014) Social impediments can mar the success of a

project. Hyderabad case study has corroborated this finding where evidence points to the role of state government in highlighting multi-benefit objectives of Hyderabad metro and creating awareness and buy-in from politicians and public at large. The findings are similar to the concluding opinion expressed by Smith & Gannon in the context of UK that ‘political support’ is the most significant success factor for light railway projects. (Smith & Gannon, 2008)

Hyderabad and Mumbai PPP metros demonstrate how an infrastructure for providing mobility solution to a city’s public for 30 years can be created at a fraction of the total budgetary outlay considered for other states executing metro systems in pure public mode. There is thus an opportunity for other state governments to achieve similar objective with a reduced requirement of upfront money.

Apart from limited upfront capital outgo, Governments of Telangana and Maharashtra have transferred the project construction, finance and O&M risk to the private operator. In case of Mumbai metro one, even the traffic risk is on the private operator. State Governments can and should deleverage their balance sheets for investment in metro systems.

Analysis of the experience with the three PPP metros in the country and the findings of the study may highlight to the public agencies the significance of role played by them in a PPP metro project. Mere transfer of major economic risks to the private operator does not absolve public agency or the government from its responsibility or successful execution of a metro project. It remains accountable to the public for quality of metro infrastructure and delivery of a sustainable performance. While no metro system is economically viable on the basis of fare box revenue alone, there are options available for supplementing revenues and must be explored and built into PPP deal for a win-win situation.

Hyderabad metro with 72 km track is the first metro in the world to have been attempted on a PPP framework. While the facts evidenced during the field study point towards successful implementation so far, it is a project the progress of which being keenly watched by the metro sector in India and

abroad. It could well emerge as a torch bearer to aspiring smart cities in India for providing sustainable mobility solutions.

Output based Manual of Specifications and model concession agreement developed for Hyderabad Metro is big step forward in promoting public private partnerships in metros and can be further modified to give comfort to the private operator in assuming and pricing various risks in a project and at the same time protecting government's interests.

Government has, as a policy initiative, proposed Metro Rail Bill 2016 and a new Metro policy with provisions for private participation in urban metro projects to reduce burden on government coffers. Metro fares have to be kept low in view to enable masses to choose this as a mode of travel. As a consequence, a metro becomes a slow return and longer pay back project, increasing the risk for private capital. Not only the proposed draft bill provides for PPP but it also recognizes that fare box revenue alone cannot make a metro project viable and therefore has provisions for inclusion of property development and commercial activities in the concession agreement.

The learnings of this study can be of use to a) public sector officials involved in policy formulation, preparing model concession agreements and setting norms and procedures for undertaking metro projects on PPP framework, b) private sector willing to lend their financial and managerial capital to successfully and profitably create the metro rail infrastructure in India and c) researchers and academicians interested in the subject of public private partnerships in urban transportation. It is believed that the study will make meaningful contribution to the extant literature of critical success factors for urban metro systems on PPP framework.

Failed experience with Delhi airport line, fare revision dispute in Mumbai metro and difference of interpretation of contract terms in case of Hyderabad metro only confirm Kelkar committee's opinion that a mechanism has to be developed for accepting uncertainties and appropriate adjustments inherent in implementing long-time contracts. "Given the market and technological uncertainties, the PPP management will take decisions based on incomplete information. Hence, a decision which looks problematic "ex-post"

need not necessarily be considered as mala fide.” A metro contract with all its complexities is an apt example of an ‘incomplete contract’ a term brought into focus with the recent Noble Award to Oliverr Hart and is a fit case for further research on ways to deal with uncertainties and adjustments during implementation and post implementation stage.