

## A REVIEW PAPER ON INNOVATION IN NATIONAL HIGHWAY DEVELOPMENT IN INDIA- PPP WAY

**Akolkar Chetan Ashok\*1, R.B. Kesarkar\*2**

\*1PG Student, Department Of Civil Engineering, JSPM's Imperial College Of Engineering And  
Research Wagholi, Pune, Maharashtra, India.

\*2Assistant Professor, Department Of Civil Engineering, JSPM's Imperial College Of Engineering  
And Research Wagholi, Pune, Maharashtra, India.

### ABSTRACT

Public Private Partnership has now becomes the worldwide mode for execution of Infrastructure projects and has made an alternative to the traditional method item rate contract, to provide economy and social infrastructure. Traditionally in India, the road projects were fully controlled, financed and supervised under the Government (NHAI) but, the cost for such things was uncontrollable and was fully dependent on the funds availability. Also, the maintenance of roads needs huge costs. National Highway Authority of India is having a wide view of creating world class Highway network across the country for achieving multiple goals such as less fuel consumption, elimination of accidents, faster movement of goods and less traffic for passengers, etc. for this they have to make the framework for both government and private sector to work together to achieve the aim by establishment of various PPP models such as Build-Operate-Transfer (BOT) (TOLL), BOT- Annuity and Hybrid-Annuity-Model (HAM). The primary intention is an innovation is a concept of improvements in processes, products or services. It entails the implementation of new ideas that result in modifications that aid in the resolution of a company's problem.

**Keywords:** Public-Private-Partnership, BOT-TOLL, BOT-Annuity, HAM.

### I. INTRODUCTION

Roads and highways were totally developed by government departments and organizations (both federal and state) utilizing their budgets for several decades in the early period. This agreement yielded mixed outcomes and was beset by operational and financial problems. Following the foundation of the NHAI, highway development became the first step in opening up roadways to the private sector. In India, road constructions have always been wholly funded, regulated, and monitored by the government. The availability of finances, their distribution, and release from the government's budget were all factors in the realization of road projects. The government has been unable to devote the necessary finances to the road sector due to the high expenses of road development, building, and maintenance. The growing volume of resource requirements, as well as concerns about management efficiency and consumer response, have prompted the private sector to get more involved. To promote private sector engagement, the Department of Road Transport and Highways has established extensive policy guidelines for private sector participation in the project (Ramakrishna Nallathinga 2019). Due to a lack of public financing, public-private partnerships (PPPs) have become more important in the building of India's national roads. The National Highways Act, 1956 was revised in 1995 with an aim to enable private investment in development, maintenance and operation of Indian highways. The government has taken a number of additional steps in this regard, including declaring the road sector as an industry to make it easier to borrow money on favourable terms and lowering customs tariffs on building equipment. The first wave of such projects including activities such as building and operation of highways started in 1994, with the public authority funding a fixed schedule of payments. The two models of PPP adopted in India for the development of National Highways are BOT (Toll) and BOT (Annuity) (Swapnil 2019).

Types of PPP Models

1. BOT – This is the simple and conventional PPP model where the private partner is responsible to design, build, operate (during the contracted period) and transfer back the facility to the public sector. The private sector partner's role is to provide funding for the project and to assume responsibility for its construction and maintenance. The public sector will allow it to collect income from users in exchange. The national

- highway projects contracted out by NHAI under PPP mode is a major example for the BOT model (Jose Tojo, 2016).
2. BOT-TOLL – A private firm must obtain funds to cover construction, operational, and yearly and periodic maintenance costs. A grant is also given to bridge the gap between the investment required and the profits generated, so increasing the project's profitability.
  3. BOT-ANNUITY- Private entity raises funds for construction, operational cost and expenditure on annual maintenance. The awarding authorities pay the concessionaire annuity on each annuity payment day, according to the annuity payment schedule. Private entity recovers the entire investment and predetermined cost of return out of annuities (Bhosale Ajaykumar, 2017).
  4. HAM- At a conceptual level, construction and operation of infrastructure awarded through BOT route are bundled and transferred to the private sector for fixed period, with the private concessionaire receive either a steady supply of government funding or user fees placed directly on end users, or both. In contrast, HAM recognizes that the government ultimately has to pay for building the public infrastructure from its own sources or if feasible through accruals of user charges from the public to be collected by the government. The government also contributes part of the construction cost, with the rest reimbursed to the private sector over the life of the project. The fundamental difference lies in the government taking over the responsibility of collecting user fees, while paying the private sector for its project investments, as per a predefined payment schedule. HAM aimed to address the concerns of the different project stakeholders (Garg & Mahapatra, 2018).

## II. LITERATURE REVIEW

**Ajit Singh (2021)** Road transportation has been the largest means of surface transport along-with railways. To facilitate and monitor this State Transport Undertakings were formulated in different states. These undertakings faced financial problems, labour unrest and survival problems. Ways to tackle the difficulties along the route of innovation and transformation have been discovered over time. Implementing innovative initiatives brought remarkable improvement in the performance of both the undertakings.

**Fikreyesus Demeke cherkos et. Al (2020)** Studied the range of characteristics and role of private partners for the approach of public private partnership. In this various agreements has been discussed such as Built-Operate-Transfer, BOT-TOLL, BOT-Annuity and Hybrid-Annuity-Model. From which one be implemented for completion of PPP road projects. Also, discuss the lack of information about selecting the agreement that links projects to be completed. It shows the link between the project and the stakeholder.

**Sandeep Ganpat Kudtarkar (2020)** Studied the public private partnership in India by examine the various case studies followed by and also few reasons for the failure and risk such as land acquisition, cost overrun, delay life cycle of project, legal dispute etc. It conclude the various failure to avoid for the future projects and avoid such conditions in a successful PPP project in India.

**Mohammed Shakil Malek et. Al (2020)** Studied the value for money as a main factor for the project in PPP. It is stated that there are many objectives which are taken under consideration whether it is Value for Money or not. The main factor was to inspect with various tools which will assist to settlement in PPP.

**Sandeep G Kudtarkar (2020)** Stated the various problems faced by the PPP projects during the post covid-19 pandemic. Why the delays and the termination of PPP programs has been done. They stated the risk of management of stakeholders and lack of skill contractors. This study provides an institutional policy and practical execution of the future PPP programs in India.

**B.Amarender Reddy (2020)** Urban infrastructure is an important factor to sustain economic growth of the nation. The quality, efficiency and productivity of the infrastructure affect the quality of life, health and live ability of the society. The current research examines Telangana's position in public-private partnerships that enhance environmental sustainability in long-term infrastructure projects.

**Zhe Cheng (2019)** Stated the innovations must be utilized by the Public-private-Partnership for the welfare of the economy of the country. They stated that the theoretical framework is supervised and the four dimensions such as driving force, subject, process and object should be taken under consideration. It will make the decision making process in PPP policy and makes innovative endowment to the global PPP body.

**Lakshya Kumara (2017)** This paper investigates financial risk associated with highway infrastructure projects by identifying parameters such as traffic flow and project cost; and further models the risk by analyzing real-world PPP based highway projects in India. It applies the Net Present Value (NPV)-at-risk model tool which uses Monte Carlo Simulation to take into account the probability distributions for different input parameters, and gives uncertainty associated with them. Further, the model is applied to 30 real world BOT highway projects to identify critical risks and consider mitigation strategies.

**Nagesha Gopalkrishna (2016)** Public Private Partnership (PPP) mode is an alternative to the traditional mode of 'item rate of contract' to provide both economic and social infrastructure. A study finds that mean technical efficiency (TE) and scale efficiency scores of PPPs are higher than the other projects. The study cites the possible reasons for this could be because of superior technical and managerial skills of the private sector, scale efficiencies and long-term nature of bundled contract.

**Shunso Tsukada (2013)** A review of the National Highway Development Program (NHDP) in India has found that the selection of PPP options and faulty selection of policy options were the root causes of delay in the project's development. The article also finds that the entangled nature of inter-agency relationships and the resultant faulty selection led to a chain reaction that slowed down the project.

### III. CONCLUSION

Based on the information carried out, there are several different types of public private partnership contracts (PPP) depending upon type of project (a road or hospital), level of risk transfer, investment level and the desired outcome. A BOT modal is generally used to develop a discrete asset rather than a whole network, for example a toll road. The simple structure provides the most freedom for the private sector partner during construction and the public sectors bears the equity risk. Hybrid annuit modal has been introduced by the government to revive PPP in highway construction in India. The launch of new modal is due to many problems encountered as associated with the existing ones. Thus, the government introduced HAM to rejuvenate PPP and also opens window for the innovational techniques to be adopted.

### ACKNOWLEDGEMENTS

With a deep sense of gratitude and proud respect, I convey my heartfelt indebtedness to my guide **Prof. R. B. Kesarkar** for his esteemed guidance, constructive criticism, inspiration and constant encouragement during the completion of research work and Head of Department **Dr. N. V. Khadake** for his continuous encouragement during research work. I am also thankful to PG Coordinator **Prof. Abhijit Bhirud** for his incessant inspiration during the research work as well as academic carrier during the institution study. Also, I would like to appreciate the moral support of my parents and friends. I am thankful again to all people who helped me during this work.

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