

## **TIME AND COST OVERRUN IN METRO LINE PROJECT: A REVIEW OF LITERATURE**

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### **ABSTRACT**

The construction industry is one of the traditional and non-environmentally friendly industries which provide one of the basic needs of human that is shelter. The industry generates construction waste which impacts environment in the form of soil contamination, water contamination, and deterioration of landscape. The excessive wastage of materials, improper management on site and low awareness of the need for waste reduction are common in the construction sites in India. However, in order to mitigate waste, construction managers have to explore management options, which include reduction, recycling, and disposal of wastes. Reduction has the highest priority among the waste management options but efficient reduction cannot be achieved without adequate identification of the sources of waste. The construction industry which supplements the second largest job in India after agriculture industry is also generates construction waste which impacts environment in the form of soil contamination, water contamination, and deterioration of landscape. It is well well-known fact that most railway construction projects showing the delay in timeline or cost overrun or both of them. This phenomenon may distress the progress of infrastructure in the country as well as may risk many contracting firms profit margin. This study was supported out based on literature review to understand the delay and cost overrun in metro projects.

**Keywords:** Railway project, Pune Metro, Material Wastage, Metro Construction

### **1. INTRODUCTION**

The construction industry in India is growing with rapid speed and investment which accounts for nearly 8% of India's GDP in 2021. The construction industry is one of the industries through which the physical expansion of the nation is accomplished. It is truly the locomotive of the national economy, at the same time the impact due to construction activities on the natural environment is immeasurable.

The construction industry is considered as one of the most important industries in India. It is well known fact that most construction projects in India are getting delayed or cost overrun. The study area of Pune metro phase I project is one of the prominent projects of the country which make this ideal to understand the time delay and cost overrun. The study carried out in this research paper will be beneficial for other metro line construction projects as well as give enrich exposure to the various factors influence the timeline in construction of metro line projects.<sup>[1]</sup>

### **2. PROBLEM STATEMENT**

Management of construction and demolition waste is a serious concern in the country given the high phenomenal growth in the construction industry; the market size is expected to increase at a Compound Annual Growth Rate (CAGR) of about 11 percent considering 2020-21.

Transportation infrastructure projects like metro projects which will be nerve for many cities of India faces delays in construction. This study is carried out with an objective to specifically identify the critical delay factors in the commissioning of Pune metro line I project.

### **3. LITERATURE REVIEW**

Investigation of Pune strip development projects presented to time invades and material wastage or both. This wonder may influence the advancement of the development business just as may uncover numerous organizations of development to be destroyed.<sup>[2]</sup>

The charging which is determined in super ventures can be co-related with uses of CAD utilizing 5 measurements and a geographic data system.<sup>[3]</sup>

The creator in this exploration accentuation discovering the most ideal course for transportation lines regarding streets and rail routes, and this paper have helped in the metro passage course examination<sup>[4]</sup>. The creator has zeroed in on the appraisal of Mumbai city which falls under metropolitan region by utilizing 3D demonstrating methods<sup>[5]</sup>.

This examination has utilized a fluffy characterization approach utilizing high-goal satellite pictures which have helped the creator for programmed street extraction.<sup>[6]</sup> In this venture for quick development and limiting waste the creator has utilized E-squander as a fractional substitution in some rate, obviously, total to go after the material utilization.<sup>[7]</sup>

The creator do explore and has utilized 4D GIS during the time spent different development exercises alongside the quality, amount, and gauge of different underlying individuals like chunks, radiates sections, etc.<sup>[8]</sup> The very much dissected exploration including the labor regarding work and material administration is considered by the creator utilizing the RII technique by with the material administration is controlled.<sup>[9]</sup> The creator has applied the RMMM strategy for infrastructural projects for different asset management.<sup>[10]</sup>

The task accentuates discovering the best shorted conceivable course for RMC vehicles to move the solid to the site from different RMC plants.<sup>[11]</sup> The creator has taken Akola taluka as the examination territory wherein utilizing geological information alongside land drafting maps are utilized for the improvement of open or empty land space for endless suburbia.<sup>[12]</sup>

The creator has utilized the open patio territory for water assortment by with the water waste isn't captured with the Mumbai transportation frameworks and subsequently a turnpike is kept up.<sup>[13]</sup> The creator has worked out the development of the material and primary components utilizing Etabs and Staad to actualize the time and cost factors with the pre- and post-development of intercultural projects.<sup>[14]</sup>

This investigation was done dependent on writing audit and a poll review that was acquired from contracting organizations, specialists and proprietors in Pune Strip. The examination explained that "late in modifying and supporting plan reports "was the most basic factor that impacts project length. The study demonstrates that "material - related components "involved the second position in significance". The absence of materials on the lookout" and "postponement in material conveyance to the site" is likewise the main components influencing project duration.<sup>[15]</sup>

According to the investigation by creator, cost overwhelm is a difficult which influences 90% of finished tasks on the planet. In this paper creator, embraced the work area methodological methodology which includes contrasting the reasons for material waste and those of cost invades from the writing to decide the conceivable relationship.<sup>[16]</sup>

According to the aftereffect of examination paper, 96.88% and 81.81% of the reasons for cost overwhelm likewise because material waste at the pre-agreement and post-contract organizes individually. There is a 86.74% cover between the reasons for material waste and those of cost overwhelms at all phases of a project.<sup>[17]</sup>

The investigation suggests that development project administrators, just as the development specialists, ought to empower the administration of material-squander causes, as it can possibly limit the reasons for cost invade for a project.<sup>[17]</sup>

Creator has conveyed the examination included progressing building development projects inside Abuja, Nigeria, from which an example of 31 public and private activities was intentionally chosen. The creator utilized Pearson second connection and the engaging technique to dissect the gathered information and the outcomes uncovered a measurably critical connection between material waste and cost overrun.<sup>[18]</sup>

The outcomes showed material waste to project-cost overwhelm goes from 1.96% to 8.01%, with a normal commitment of 4.0% to project-cost overruns.<sup>[18]</sup>

In this paper, the creator contemplated five limited scope private development projects in Nasik where odds of waste age are more because of absence of appropriate administration.<sup>[19]</sup>

The development material waste situation of every one of the 5 private, medium to little building locales discovered to be significant in cost-adequacy and necessities the executives. The increasing expense on development project emerging because of development material wastage which is in the middle of 5% to 10 % of task according to the examination and investigation by author.<sup>[19]</sup>

In this investigation, the creator intends to set up connection between times invade and work profitability on building site in India. The information result show that deficient asset for the venture, lacking arranging before project departure, insufficient devices and gear and postponement in conveyance material are the rundown of the significant reasons for time invade while the utilization of wrong development strategy, deficient development material, and off base drawing particular are the key factor causing low work profitability building site. The huge negative relationship figured out between time invade and work profitability at building site.

The creator closed by suggesting that the early arrangement of the venture chief could guarantee appropriate administration of both human and material assets that could ensure improved profitability and eventually save project from time overcome.<sup>[20]</sup>

it has been illustrated that environmental issues such as increase in the flood levels due to the illegal dumping of construction and demolition waste into the rivers, resource depletion, shortage of landfill and illegal dumping on hill slopes are evident in the metro cities. The study report stresses the importance of recycling construction waste, creating awareness about the problem of waste management and the availability of technologies for recycling.

As per the author, the following suggestions are fetched from the research paper:

- Construction and Demolition Waste (C&D) is characterized by a large variation range of composition as well as physical properties.
- Reuse of concrete C&D, as secondary aggregates require incorporation of liberation techniques into the processing.
- Reuse of masonry C&D in construction requires technologies, which improve quality and homogeneity.
- Properties of the lightweight granulates are rather constant or at least equal.
- Waste wood can be used for shuttering.

#### 4. CONCLUSION

Owing to growth in construction particularly in infrastructure project, it is expected that construction waste generation in India will increase. If measures to minimize and handle the construction waste are not developed and efficiently adopted, it may threaten environment as well as the sustainable movement of the country.

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