Typical Challenges Faced In The Slum Transformation Construction Project

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Abstract: Nowadays, timely completion of the project has become a crucial part in the construction industry. The responsibility of cities is to mobilize in order to improve housing circumstances in slums as a medium of meeting fundamental human needs. Slum areas are highly populated regions created without adequate planning and lacking the key elements of day to day life. The slum rehabilitation is a critical project for any contractor or owner. Generally, consistent delays in the project show up in the preplanning and initial stages of the construction projects, for example, getting the general plans, getting the license, permissions, various legal clearances and so on. The complete construction stage is the shaping phase of any project where numerous unforeseeable events could occur. Lack in determination of the delay factors in the slum transformation project would contribute to the project delays, schedule overrun and capital overruns. This study aims to recognize the possible challenges faced in the construction of a slum rehabilitation project. This study classifies delay factors of the project in different stages i.e., pre-planning and construction stage and proposing a better type of approach to overcome delay related challenges in slum rehabilitation construction project.

Index Terms— Slum, delay factors, slum transformation, pre-planning stage, construction stage, schedule overrun, capital overrun

1 INTRODUCTION
AS the human population has grown, the need for housing for man has also increased. A speedily urbanizing population and governments’ inadequacy to satisfy their requirements led in a shortage of accommodation and infrastructure. Slums contribute to a major portion of a city’s population due to high density of occupants per km². But, such large amount of people aren’t privileged to even basic amenities of daily life such as water supply, sanitation waste disposal, etc., making the living standards of a vast number of people miserable. Slums also obstructs the potential development of the land where they are located. Thus, government nowadays has started various slum rehabilitation projects for optimized use of land encroached by the slums. Also, these rehabilitation projects aim towards improving the living standards of the people living in the slums by providing better shelter and amenities. Many stakeholders are engaged in procedures of approval, legalizing, funding, and construction. When many groups are engaged, the general advancement is delayed by the act of finishing legal formalities and consenting to legal contracts. Therefore, most of the slum rehabilitation projects are delayed and affected the project completion. The slum rehabilitation construction project has many complexities such as management of the slum residents, dispute resolution, land acquisition. Among these complexities, delays are one of the most unwanted events affecting slum rehabilitation projects.

Objectives of the study
To rectify various challenges and difficulties in slum rehabilitation construction project. To determine the major challenges affecting the construction along with their sources. Classification of the factors causing difficulties in different stages of slum rehabilitation construction project. To use Primavera P6, a project management tool for representation & observational study of project schedule. Listing out challenges faced by slum rehabilitation construction project in the construction of a slum rehabilitation project.

2 LITERATURE REVIEW
Prakash Kumar and Piyush Raj (2015) examined on recognizable proof of reasons for delay in mining/manufacturing industries in Indian setting by using two distinct procedures are RI and Importance index dependent on level of seriousness and level of recurrence. Rathod Rajshekhar Gopal (2016) suggested that the arranging and planning of activities for development of huge construction works are mandatory. In this investigation, an exertion for arranging, planning and delay examination is made by refreshing of different exercises. The study of Amilcar Arantes and Pedro Fernandez (2015) focuses around distinguishing proof of the fundamental cause for the delays in Portuguese development industry and its effect. A questionnaire study with Five-point Likert scale was utilized to assess the significance of the causes and effect of delays in development work. Varma Santosh (2014) considered loss in profitability in connection with delay examination in structure development projects. In this investigation, a delay examination is finished by window investigation technique which fundamentally calculates the variations in planned and actual schedule to distinguish the schedule effect and loss in efficiency.

3 METHODOLOGY AND ANALYSIS
As discussed earlier, slums are the areas with a very high density of human population but with considerably less number of basic amenities. Thus, for the betterment of such a large part of population & to raise the standards of living, slum rehabilitation is a critical type of project. The methodology of research adopted for this paper included an observational study of a slum rehabilitation construction project in Pune. Total built up area of the project was 3,04,000 sqft with construction of three buildings. The challenges faced in the construction of the project were analyzed and identified by observing the site conditions and interviewing people associated with that project consisting of executive engineer, planning engineer, project head. After incorporating the views of responsible personnel in the project & observational analysis data it was found that delay in the schedule of the project was the most critical challenge faced by the slum rehabilitation project. There are extreme possibilities of occurrence of delays in the pre-planning and the construction phases of the project. The causes of delay occurred in the project were shortage of labours, slum transformation, material
shortage, machine breakdown etc. All the challenges ultimately contributed to delays in some or the other way. Therefore, delay analysis of the project was done. The data collected for identifying and analyzing delay events consisted of planned schedules, actual schedules and hindrance reports. As- Planned Schedule- The schedule which was planned before starting of construction work. As- Built Schedule- The schedule made as per actual progress of work. Hindrance Register- Document with records of delays and related activities. Complete planned duration of the project was 19 months and the project was completed in 21 months. The project was delayed by 4 months. But by managing the construction activities i.e., shuttering, casting etc. and proper planning with catch up plan dates, the delays were minimized to 2 months. In this paper, schedule of building C is made with planned and actual dates using project planning software Primavera P6 (shown in Figure 1). Planned duration of building C is 301 days and actual duration is 360 days (shown in Fig. 1). Therefore, the total delay in the duration of building C, Total delay = 360-301 = 59 days

4 RESULTS AND DISCUSSION
The challenges faced in the various phases of the construction of slum transformation project were determined and explained below.

4.1 Inception or Initial phase of the project
1. Temporary evacuation and mobilization of the people
This stage was a crucial and sensitive part of the project due to involvement of relocation of the local residents. As this was slum rehabilitation construction project, transformation of the slum to another area was essential for further progress of the project. Therefore, the total delay in the duration of building C, Total delay = 360-301 = 59 days
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2 Material shortages
The construction was done using MIVAN technique which resulted in difficulties for getting aluminum shuttering material. The material wasn’t available on the site for a long period of four months. This affected the domains such as labor idle time, equipment and machinery cost etc.

4.1 Construction Stage
1 Labour payment issue
Irregularity in payments to the working staff was observed due to some issues. The labors’ strike of three to four days affected the construction work in this phase.

2 Heavy rainfall
Being located in Pune, a region of heavy rainfall according to Indian monsoon conditions, the project was naturally affected and delayed in rainy season. Due to heavy rainfall the work got stopped and affected the project duration.

Figure 2. Challenges faced in slum rehabilitation construction project

3 Public strike
Social and political factors affected the project delay in direct and indirect means. The construction was affected two days due to public strike.

4 Labour's shortage
Poor workforce strength leads to delay in the construction work. Shortage of labours affected the delay of seven to eight days.

Drawings not received on time
Revised drawings with corrections were not received on time. So, the construction work was having delays due to redesigns and revisions of drawings.

5 Machine breakdown
There was a failure in the loader of the concrete batching plant. Therefore, the welding and repairing of loader was done and delayed slab casting activity.

6 Additional RCC work
Extra work-orders from the client with extra items of constructions i.e., Sewage treatment plant, Underground water tank and compound wall contributed in delay of the project.

5 Conclusion
In the slum rehabilitation project, the timely completion of project is of utmost importance. This study classifies the possible challenges faced by the contractor and the owner in the construction of slum rehabilitation project (Shown in Figure 2). The study could help to adopt a predictive approach for anticipation of delays in the construction of a slum rehabilitation project.

References


