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# Identification of Factors Causing Time and Cost Overrun in Construction Projects in India

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**ABSTRACT:** The cost of construction is the most important criteria for the success of the project, and therefore, the results of construction projects are usually expressed in cost and deviation from the budget. Despite the available literature, cost estimation methods, cost indices, etc., construction projects rarely correspond to budget expenditures. This research focuses on exceeding the cost of construction and identifying various factors that affect construction costs. Based on a broad review of the literature and industry experts' data, sixty-eight factors were identified that lead to cost overruns. It is concluded that the factors, namely creep in the scope, construction delays, processing and contracting practices of the lowest bidders, are the most important factors in exceeding the cost of construction in non-infrastructure Indian projects.

## 1. INTRODUCTION

### 1.1 General

Execution of a construction project is usually expressed in time and cost difference from its baseline. Of the four main constraints, namely volume, cost, time and quality, cost efficiency is the most important and common issue in the global construction industry [1]. It is important to measure the difference in construction costs in order to understand the results of the project and thus understand the financial risks associated with the implementation of the project. The difference in cost resulting from overspending on a project is marked as a negative impact on the economy and profitability. Several prospects for overspending are in the existing literature and are proven. However, it is not sufficiently explained why the excess costs continue to occur, although there is generally enough knowledge about the excess costs. The reasons for the inaccuracy of forecasts are different for different projects.

The construction industry is an important industry both globally and nationally. This provides huge employment for people and plays a very significant role in the country's economy. Delay is one of the most common problems in the construction industry. The excess of time and costs is a consequence of delays in project implementation. Exceeding the project is a serious economic problem in developing countries, where the project is implemented in conditions of many uncertainties. It spends financial resources, delays development, and makes construction more expensive. As globalization and technology-oriented economic growth increase, a scientific and systematic approach to project management is needed around the world to ensure that the project's objectives are met within the limits of time, capital and other resources. But as demand grows, projects with excess time and cost also increase. Time and cost are the two main elements of project management, in addition to quality and volume. One of the biggest problems in managing a construction project or in front of one of the project managers is ensuring that the project is completed on time and within the estimated cost.

### 1.2 Scope

- I. Identify the key factors responsible for the excess time and overspending of construction projects in India and classify them according to their significance.
- ii. To find appropriate mitigation measures to overcome time and overspending.

### 1.3 The need for training :

- I. India's construction industry is one of the most important industries contributing to a significant amount of GDP.
- ii. Successful management and implementation of construction projects is based on three critical factors, ie. time, cost and quality.



iii. The main purpose of this study is to identify the factors responsible for the overspending of the time and cost of the construction project, and to classify them according to their relative importance indicator and to propose appropriate solutions for correction.

Research will help managers in the following ways:

- a) Many projects are delayed and exceed the budget; research will help managers avoid factors that cause time delays and overspending.
- b) Managers can increase profits through proper planning and budget allocation.
- c) By taking into account the identified critical factors and using appropriate control measures, it will help the firm to build a good reputation in the market.
- d) Since payment for projects is made on the basis of important stages, then, filling in the main stages and the allocated budget in time, will help managers get money for work.
- e) This study will help managers ensure customer satisfaction by keeping the project in time and schedule.

#### 1.4 Project limitations

The three limitations specified in the project management triangle are interrelated.

- I. Increasing volume means increasing time and costs.
- ii. A severe time limit can mean an increase in value and a decrease in volume.
- iii. A strict budget can lead to increased costs and reduced volume.

This makes it very important for the project manager to organize the work so that all three restrictions are met. Any failure can affect the entire project and the reputation of the organization.

## II. LITERATURE REVIEW

overspending of time and costs is the most serious problem in the construction sector. In any construction project there is time and overspending, and their seriousness varies greatly from project to project. To reduce and eliminate these overspending in any project, it is important to determine the exact reasons for the excess time and costs.

Khatkar K B and Hedao N A, (2016) analyzed the literature and conducted a survey of the questionnaire and determined that the causes and consequences of delays in construction projects are local political interference; Delay in unfinished payments by the client; Incorrect planning and planning of projects; Inadequate distribution of funds; Escalation of material prices. The Relative Importance Index (RII) was used to assess and rank factors. He also used the Spearman rating correlation coefficient test to determine a significant correlation between the prospects of contractors and consultants.

(U.SindhuVaardini, S.Karthiyayini, P.Ezhilmathi, 2016) analyzed various factors using different methods (frequency index method, severity index method, importance index method and relative index method), collecting questionnaires based on previous studies. He identified poor climate planning and planning, lack of proper site management, fluctuations in material speed, monitoring and control, mismanagement of resources in a construction project, and poor financial control on site could lead to overspending.

(Serdar Durdiev, Suhayda Ismail and Noo Abu Bakar, 2012) identified various factors for such overspending by conducting a descriptive survey in a typical developing country, Turkey, and using the relative importance index method to analyze the data. The analysis of the factors shows that the main factors influencing the overspending of construction costs of housing projects in Turkey are inadequate assessment of project costs, incorrect planning and high cost of necessary resources, lack of skilled labor, construction materials and high land prices .

Aishwarya Prashant Patil, (2017) identified factors, which are responsible for exceeding the time, based on the perception of all three main parties to the contract, namely the contractor, consultant and client, ie delay in payment, weather conditions, Inaccurate planning and planning of the project by contractors, unfulfilled technical staff of the contractor, Excessive work in the hands of contractors, Lack of work, Delay in approving additional work and poor site management and oversight of contractors, Ineffective time management.

(Ismail Abdul Rahman, Aftab Hamed Memon and ArnadTarmizi Abd. Karim, 2013) identify significant factors, causing costs to be exceeded in Malaysia, by conducting a survey of the questionnaire and analyzing statistics using the relative index of importance method (RII) for hierarchical assessment of factors and established, that the first 3 most significant overspending factors are cash flow and financial difficulties, faced by contractors, fluctuations in material prices, and poor site management and oversight.



(Ghaleb J. Sweis, RatebSweis, Malek Abu Rumman, Ruba Abu Hussein, Samer E. Dahiyat, 2013) identify factors influencing overspending in the Jordanian public construction sector. After reviewing the literature, he classified several factors, affecting overspending on construction projects, on: Increase in material costs due to inflation, Increase fuel consumption, Design changes, The inaccurate number is removed, Lack of experience in the location of the project, Lack of experience in the type of project, Lack of experience of local norms, Unpredictable weather conditions and equipment shortages. After examining these cost overruns and classifying the views of 30 engineers working in the Jordanian public construction sector, it was found that due to design changes, lack of project type experience and location were removed after processing nine factors using PCFA analysis.

(Nabil Al-Hazim, Zaydun Abu Salem, 2015) Analyzed many documents and reports on several projects and found that the most important factors are: weather conditions, terrain conditions, changing order and the availability of labor.

(S. Shanmugapria, Dr. K. Subramanian, 2013.) Researched important factors that exceed the time and costs of Indian projects, and conducted a survey of the questionnaire, developed on the basis of a literature review and distributed to contractors, consultants and owners of the Indian construction industry. He analyzed the questionnaire data using the relative index method and found that the main reason for the excess time is a significant market rate, contract adjustment, and high quality of work and key factors overspending are high shipping costs, changes in material specifications, and escalation of material prices.

(Mr. Salim S. Mullah, prof. Ashish P. Wagmare, 2015.) Identified that projects suffer from a client's delay in providing some of the material they are to deliver to the contractor under a contractual agreement or delays in settling account accounts. These problems, along with other issues, such as delayed authorization and other issues listed above, make it difficult to complete the project on time and within the planned budget. Another challenge facing the construction industry is low resource productivity, especially equipment productivity.

(Anant Narayan Shete, WaibhavDurvasKotavade) Identified economic instability, political situation, fluctuations in material prices, the level of competitors and currency exchange as the top five factors influencing the excess costs in construction projects.

(Weibhav Yu. Catre1, Dr. D.M. Haitidak) has shown that one of the most important factors that can lead to overspending is the "delay in pre-delivery of the site". Delay in the supply of materials and equipment by the contractor; price inflation significantly leads to excess costs. "Low efficiency", "Delay in payment of bills", "Lack of equipment maintenance", "inadequate programming of material purchases, strikes, protests and other external variables was the most important factor influencing the project delay.

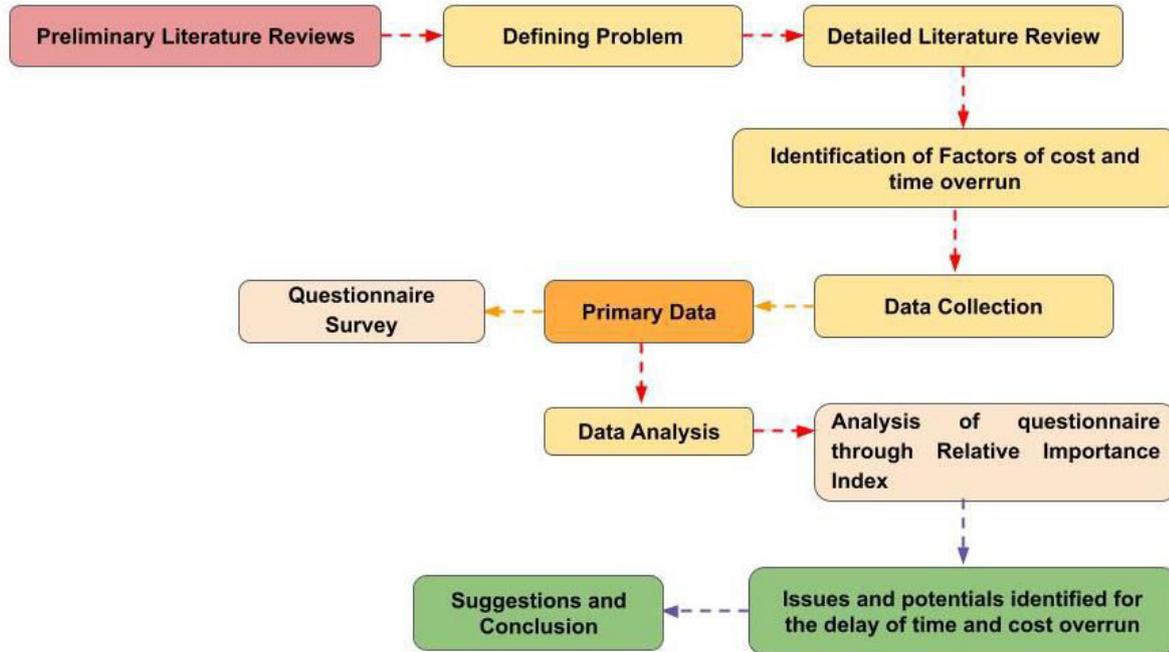
Aftab Hamed Memon , Ismail Abdul Rahman , Ade Asmi Abdul Azis) a survey of questionnaires was conducted and interviews were conducted for expert opinion among selected experienced employees, to identify significant factors, causing costs to be exceeded in Malaysia, and the answers were evaluated by the average index method, which established 59 general factors, causing overspending. The results show, that bad designs, design delays, unrealistic contract duration and established requirements, lack of experience, late delivery of materials and equipment, the relationship between management and labor, preparation of delay and approval of drawings, inadequate planning and planning, poor site management and supervision and construction errors were the most common and significant factors, which were perceived by experts.

Sunil A. Cage, Megendra R. Manet, Arjun M. Chugule, Abhishek V.Kadam, Rushikesh S. Majale) identify the most influential factors causing project delays and overspending in three different regions of the country, such as the eastern region (West Bengal and Orissa) of the southern region (Karnataka and Tamil Nadu) and the western region (Maharashtra and Gujarat). Data from past studies in each region were selected for analysis, and the most influential factors were identified; Lack of planning and planning, Ineffective monitoring and feedback process, Poor construction methods, Underestimation of project cost, Delay of payment, Improper site management and Insufficient contractor experience.



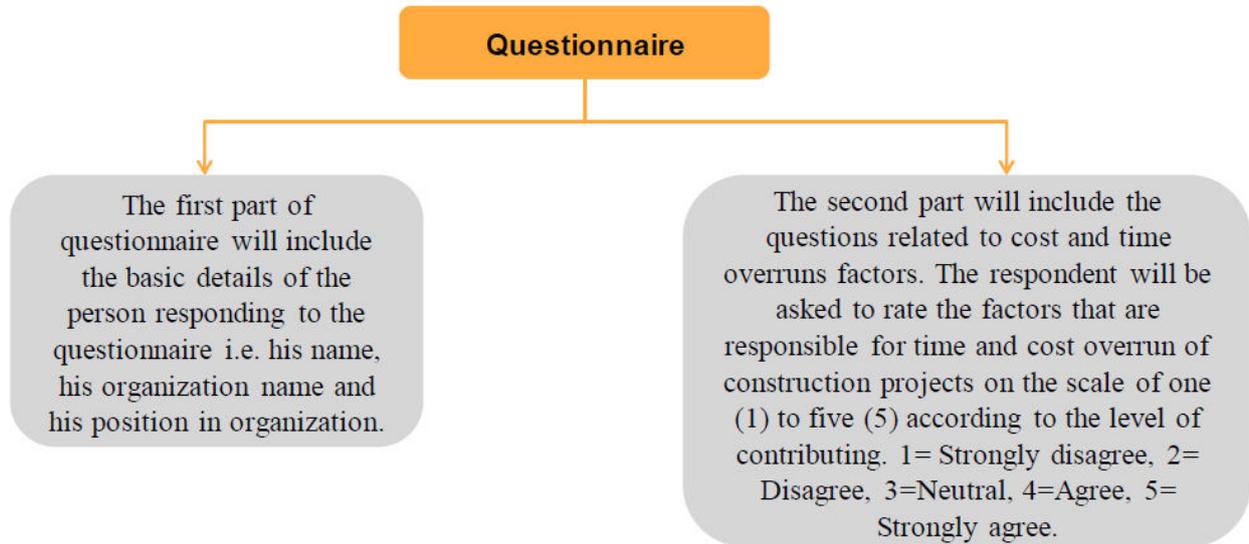
**III. METHODOLOGY**

The following methodology shall be adopted in the dissertation work.



**3.1 Data Collection**

A questionnaire will be prepared to collect the data for the study. The questionnaire will consists of 2 parts.



**3.2 Data analysis**

The questionnaire will include specific factors, and the questionnaire will be provided to various professionals with experience and high qualifications in relevant fields. The answer given by the respondent was analyzed by the method of relative importance, stated by the Likert scale model. Likert scale elements are used to measure respondents' answers to a particular question. For data analysis, it is usually coded as follows

- 1 Strongly disagree
- 2 Disagree
- 3 Neutral
- 4 Agree
- 5 Strongly agree



#### IV. CONCLUSION

It presents important conclusions drawn from the analysis of perceptions to identify and assess factors that affect the excess of time and costs in construction projects. The first five factors of cost overruns in the value index, ranging from 57.55 to 50.28 percent, are accepted as the main factors in statistical results. From the above results it is concluded that the main factors are "Inflation and escalation of the price of the material", "Change in the project by the owner", "High cost of transportation", "frequent breakdown of the construction plant and equipment" and "processing due to errors during construction".

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