

# Factors Affecting Cost Overrun in Construction Projects



Faisal Nazir, Vishal Yadav

**Abstract:** Cost overrun is observed as one of the common and basic problem which took place in different construction projects and affects its progress. Construction cost can be considered as the key factor to tell whether a project is successful or not. The cost of any project may be within, under or overrun. Among these cost overrun affects the project progress directly. Since it affects profit of the contractor, financial problems, delay in completion time, compromise on the material quality. Cost overrun can push the particular company to bankruptcy. Therefore various factors influencing the cost overrun must be thoroughly analyzed in order to reduce the cost overrun in such projects without compromising the quality of the project. The need of this research is to recognize the critical elements that lead to cost overrun in such projects.

**Keywords:** Analyze Construction Industry, Cost Overrun, and Factors.

## I. INTRODUCTION

Cost overrun or cost increase or budget overrun means the unexpected increase in the estimated cost of a project. It very well may be basically characterized as the contrast between the evaluated cost and the last and real utilization on the project. And to know the success status of project expenditure within the budget is importantly considered. Most of the construction sectors around the world whether in developed countries or developing countries like India and from small scale to large scale industries face three constraints

- To complete the projects within the anticipated budget
- The time frame and expected quality targets
- The profits earned from the undertaken projects.

Cost overruns can occur in developed countries like United Kingdom and developing countries like India. The situation in developing countries like India is further aggravated due to the fact that most of the construction companies are in MSME sector of economy which are unorganized and under regulated. According to a report published by business today as many as 369 major infrastructure projects show cost overrun of rupees 3.58 lakh crore owing to different reasons and factors.

Revised Manuscript Received on December 30, 2019.

\* Correspondence Author

**Faisal Nazir\***, Scholar, Department of Civil Engineering, RIMT University, Punjab India

**Er. Vishal Yadav**, Assistant Professor, Department of Civil Engineering, RIMT University, Punjab India

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

## II. LITERATURE REVIEW

**Lekan M. Amusan, et al, (2018)** carried out a study related to data exploration on factors that influence construction cost and time performance on construction project sites. In this study they designed questionnaire in Likert scale and then data was analyzed where the find out the critical factors causing cost overrun like inexperienced contractor, lacking the quality of proper planning, market price hikes, unremitting variety requested and change in design of structure. [1]

**Murat Gunduz and Omar Maki Liqaa** carried out their research on causes of cost overrun in construction industry for which the conducted a questionnaire survey where the after effects of the overview revealed that the fundamental driver of cost increase in infrastructure industry includes wrong cost estimation, inappropriate panning and arranging, unreasonable agreement length, continuous changes in work, continuous changes in design, insufficient work/ capability, rise in labours wages, raw material and transportation.[2]

**Ghulam Abbas Niazi and Noel Painting** studied the significant factors causing cost overrun in construction industry in Afghanistan. In this research they found out that fraudulence/bribery, delay in progress installments, financial problems from contractors side for financing the project, security, request change by proprietor while execution or renovation, abrupt hike in market value are major issues that results to the budget overrun in the construction.[3]

**Nabil Al-Hazim, Zaydoun Abu Salem and Hesham Ahmad** carried their research on the delay and cost overrun in infrastructure projects in Jordan for this study they visited different construction sites and gathered their data after which they analyzed that data and obtained the result. And the outcome demonstrated that territorial and climatic conditions are the top variables causing the postponement in completion and budget increase in various construction projects in Jordon. [4]

## III. METHODOLOGY

In this research a straight forward and easily perceived method was procured to assess the views of different people associated with the construction industry on causes of the cost increase in construction projects. A questionnaire survey was established to determine the noteworthy elements influencing the cost rise in infrastructure projects. To quantify the information from poll overview the ordinal scale was utilized.



The Likert scale of five ordinal measures from 1 to 5 according to the level of the degree of importance and contribution; where 1 indicates very low, 2 low, 3 medium, 4 high and 5 very high.

The principle purpose behind leading meetings was to confirm whether the responses were significant in regard to principles of study. The questionnaire was then circulated to 5 different sites, sites with the cost overrun. There on these sites the questions were asked and factors were discussed with the project manager, works supervisor and the contractor.

In this examination, the relative importance index (RII) was applied to prioritize the root elements of cost increase in construction. The relative importance index (RII) was determined as below:

$$RII = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5 \times N}$$

Where,

RII = Relative Importance Index

N = Number of Respondents

n = Rating from 1 to 5 based on Likert's Scale

IV. RESULT

Table- I: Overall RII and ranking of cost overrun factors

No.	Description of Peak factors influencing cost overrun	RII	Rank
4	Delays in progress payments	0.80	4
5	Financing problems	0.92	2
6	Delays in delivering site to the contractor	0.64	8
18	Poor site management by the contractor	0.64	8
20	Penalties resulting from safety accidents	0.60	9
25	Lowest bidding procurement method	0.96	1
26	Wastage of material	0.72	6
33	Overtime issues	0.68	7
39	Corruption and bribes	0.68	7
41	Natural disaster	0.72	6
42	Severe weather conditions	0.88	3
43	Market fluctuation	0.76	5
46	Legal matters	0.76	5
47	Design changes	0.80	4

COST OVERRUN PERCENTAGE BASED ON ESTIMATED COST

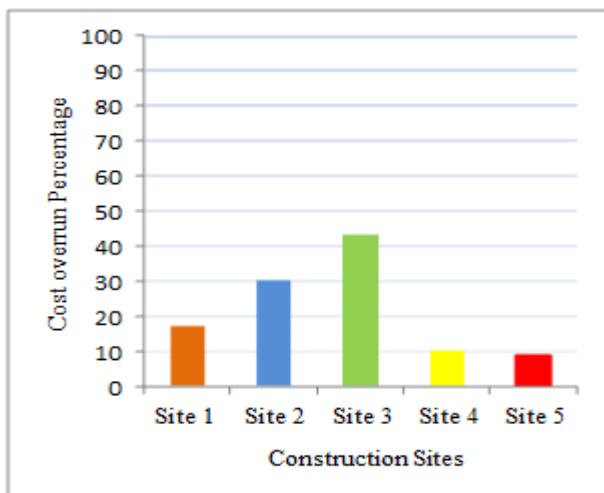


Fig 1: Bar chart representing the Cost overrun of 5 different Sites based on estimated cost

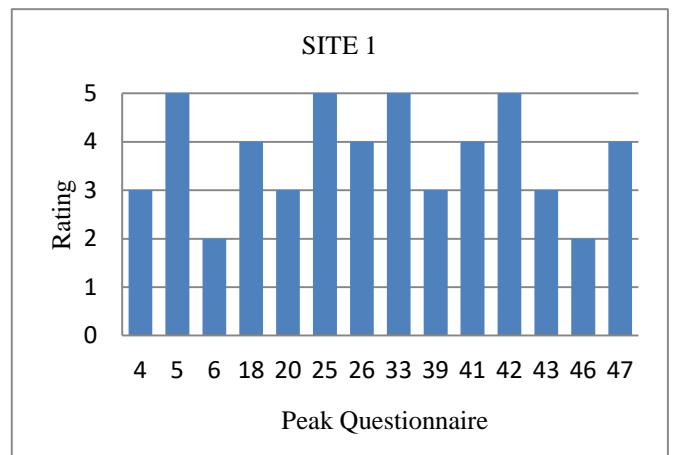


Fig 2: Bar Chart representing the responses of Peak Questionnaires from site 1

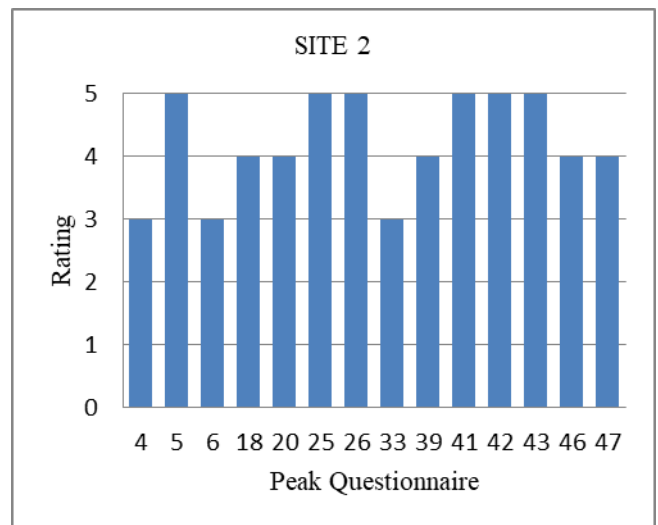


Fig 3: Bar Chart representing the responses of Peak factors from site 2

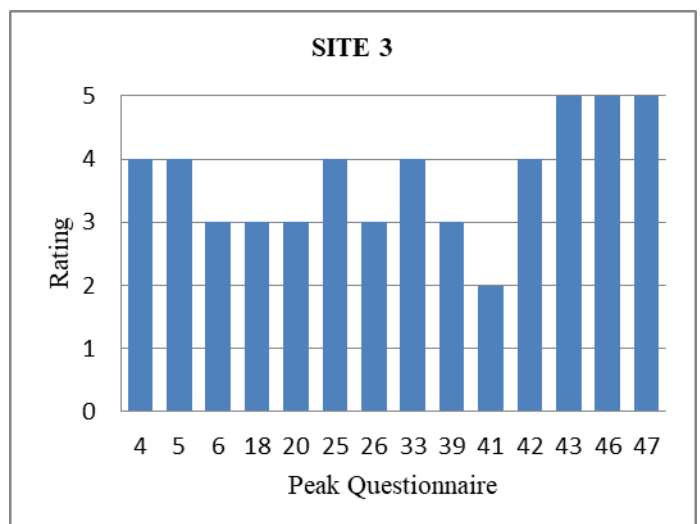


Fig 4: Bar Chart representing the responses of Peak factors from site 3



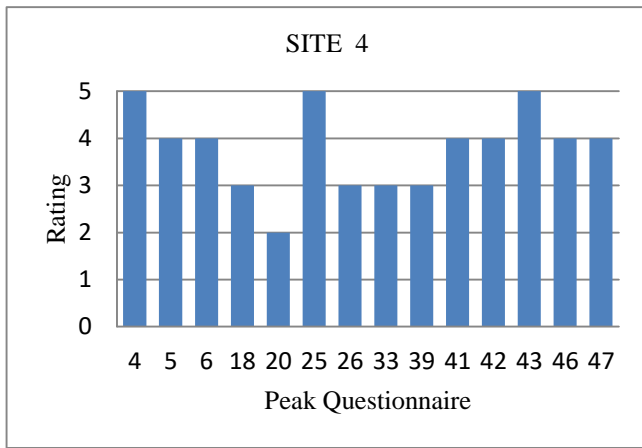


Fig 5: Bar Chart representing the responses of Peak Factors from site 4

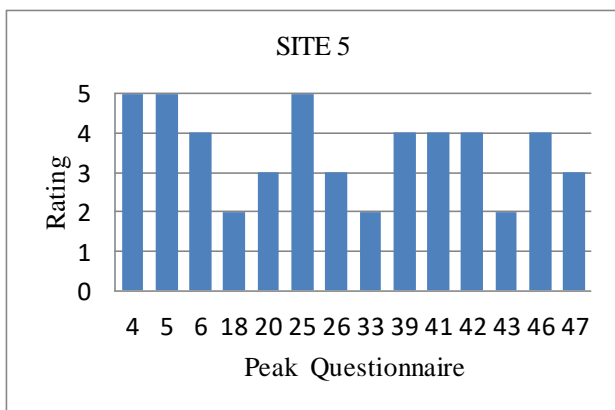


Fig 6: Bar Chart representing the responses of Peak factors from site 5

MEAN PERCENTAGE OF 5 SITES

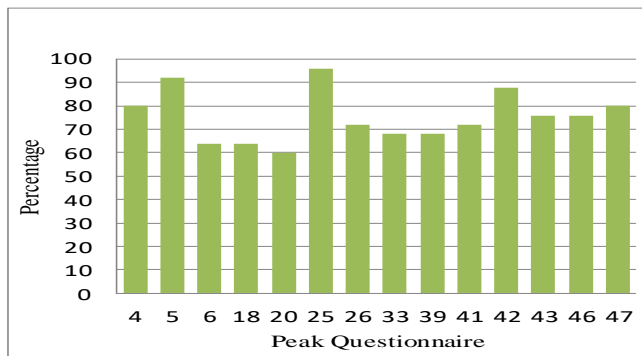


Fig 7: Bar Chart representing the mean percentage of Peak Factors from all sites

V. DISCUSSION ON RESULT

Fig 1 displays observation recorded from all sites representing the increase in estimated cost out of which site 3 SPS library shows highest increase of about 42.9% which is nearly 13 crores. The main reason behind this increment in cost is change in design and legal matters.

Fig 7 displays mean percentage of peak factors from 5 sites. Out of the displayed factors delays in progress payments, financing problems, low bidding procurement method,

severe weather conditions and changes in design are the most significant factors dominating the cost overrun.

VI. CONCLUSION

Cost overruns are the critical issues faced in the infrastructure industry. Project may be considered successful project if it is completed within estimated cost. Based upon literature survey, various factors leading to cost overrun have been identified and with the most appropriate method of data analysis the most significant factors dominating the cost overrun are analyzed.

Based on the reviews it is identified that factors which are mainly accountable for the fluctuations in cost in my research are delays in progress payments, financing problems, delays in delivering the site to the contractor, poor site management by the contractor, penalties resulting from safety accidents, low bidding procurement method, overtime issues, corruption and bribes, natural disasters, severe weather conditions, legal matters and changes in design.

Analysis of the responses received were filtered using statistical ranking tool that is relative importance index and cost impact method. The conclusion of this research would help the construction industry to avoid critical cost overrun factors

REFERENCES

1. Lekan M. Amusan, et. al "Data Exploration on Factors that Influence Construction Cost and Time Performance on Construction projects".
2. Murat Gunduz, -2018, "Causes of Cost Overrun in Construction Industry" Qatar University".
3. Ghulam Abbas Niazi, Noel Painting,-2017, "Significant Factors Causing Cost Overrun in the Construction Industry in Afghanistan" 7th international Conference on Engineering, Project and Production Management
4. Nabil Al-Hazim, Zaydoun Abu Salem, Heshan Ahmad – 2017, "Delay and Cost Overrun in Infrastructure Projects in Jordan" 7<sup>th</sup> International Conference on Engineering, Project and Production Management.
5. Adnan Enshassi, Saleh Abushaban,;Cost Overrun in Construction projects" The 2<sup>nd</sup> International Engineering Conference on Construction and Development.
6. Ahmad Senoucia, Alaa Ismailb, Neil Eddina -2016, "Time Delay and Cost Increase in Qatar Construction Projects" Creative Construction Conference 2016
7. U. sindhu Vaardini, S.karthiyani, P. Ezhilmathi – 2016 A Review on the "Study on the Cost Overrun in Construction Projects" International Journal of Applied Engineering Research.
8. Gul Polat, Ferzan Okay, Ekin Eray, -2014 "Factors affecting Cost Overrun in Micro Scaled Cost Overrun Construction Companies" Creative Construction Conference.
9. Ismail Abdul Rahman, et. al-2013 "Verifying responses that lead to budget increase Using PLS-SEM Approach" Evaluation of Learning for

AUTHORS PROFILE



Faisal Nazir, M. Tech Scholar Department of Civil Engineering RIMT University, Punjab India



Er. Vishal Yadav, M. Tech in Structure Engineering Assistant Professor Department of Civil Engineering RIMT University, Punjab India

