



“CAUSES OF COST OVER RUN IN CONSTRUCTION”

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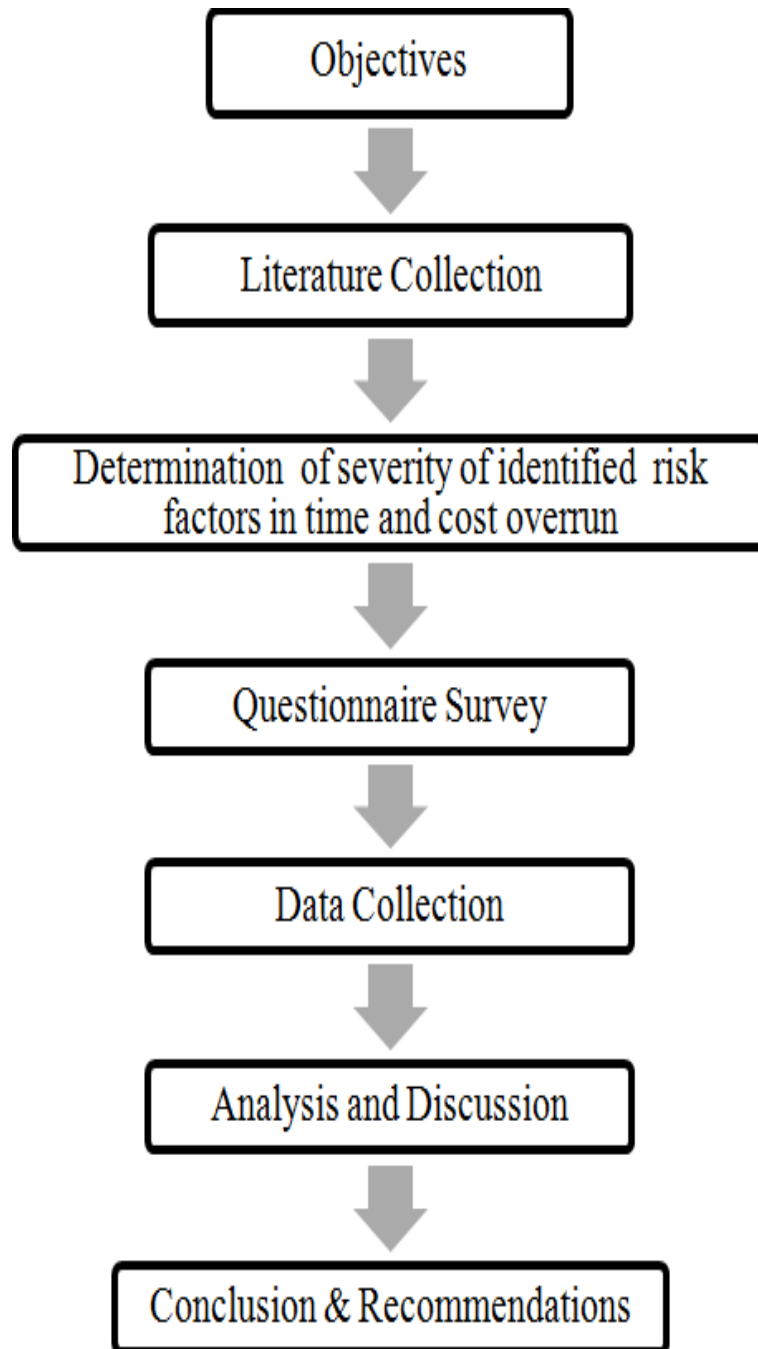
Abstract: The construction industry is negatively affected by cost and time overruns which further negatively impacts the contractual stakeholders. Construction delays and cost overruns are a global phenomenon since one of the major problems in the construction industry involves unexpected incurred costs and late delivery of projects. The successful execution of construction projects and keeping them within prescribed schedule and cost is very important for effective cost performance. This research work is carried out on studying significant factors causing Cost overruns in Indian construction projects. A valid questionnaire for the survey was developed based on factors for cost overruns identified from literature review. Most of the construction project is successful only if the missions are achieved as per planned schedule and minimum cost i.e. without time and cost overrun. The main purpose of research which has categorized the causes responsible for time and cost overruns in projects. Investigation was carried out with quantitative approach of questionnaire survey to understand the perception of practitioners involved in construction industry towards various factors in causing time and cost overrun. A valid questionnaire for the survey was developed based on factors for cost overruns identified from literature review. The targeted respondents were client, contractor, owner and consultant representative involved in handling construction projects. The most critical factors are identified using questionnaire survey and analyzed the interrelationship and frequency of those factors using SPSS (Statistical Package for Social Sciences) Software Version 20. The study will help to identify the critical factors for cost overrun and can find out the solutions and recommendations which can be considered to control those factors.

Keywords: Construction Industry, Cost overruns, India, SPSS software

1. INTRODUCTION

Indian economy, have been on a very positive development for a year now, Achieving impressive growth rate percentages to the Gross Domestic product (GDP). The construction has a great impact on the economy of all countries. Construction activities contribute more than 10% of India's GDP. A cost overrun, also known as a cost increase or budget overrun, involves unexpected incurred costs. Cost overrun is common in infrastructure, building and technology projects. Over 51% of projects costing Rs 150 crore and above are seeing delays in completion as on December 1, 2022, government data shows. In November 2020, 32% of the projects showed delays in completion and in March 2018, only 19% projects were delayed. The number of projects showing cost overruns as of December 1, 2022, was 22%, higher than 13% in March 2018. The report shows the total cost escalation has been to the tune of Rs 4.5 lakh crore, which is 22% more than the original project cost. A report released by the Infrastructure and Project Monitoring Division of the Ministry of Statistics and Programmed Implementation (MOSPI) shows. Therefore, the types of strategy intermediations required to rectify the problem also remain unidentified. Time and cost overrun have significant implications from an economics as well as political point of view. In general, time overrun and cost overrun reduce the productivity of available economic resources, edge the development potential and diminish the effectiveness of the economy. Government data suggest that a majority of projects close to 60% are overwhelmed by time and cost overrun.

2. METHODOLOGY



3. QUESTIONNAIRE STRUCTURE

Risk factors for this study are classified into ten categories namely,

- i. Client related
- ii. Contractor related
- iii. Project planning and control related
- iv. Consultant related
- v. Material related
- vi. Labour related
- vii. Equipment related
- viii. Contract related
- ix. Force majeure/climatic conditions
- x. Economic related

4. RESULT AND DISCUSSION

Statistical Package for the Social Sciences(SPSS)

"SPSS stands for "Statistical package for the social science." It is an IBM tool. It was first launched in 1968. It is a comprehensive system for analyzing data. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and complex statistical analysis." The following is a brief overview of some of the functionalities of SPSS:

- Data transformations
- Data Examination
- Means, test, ANOVA, Correlation,
- Nonparametric tests Regression
- Nonlinear Regression
- Nonparametric analysis
- Graphics and graphical interface.

SPSS is an integrated collection of quantitative analysis software that is particularly popular with social science researchers. SPSS is a desktop and larger computer based quantitative analysis package produced by SPSS Inc. Using SPSS performs many data management and statistical analysis tasks. Statistical analysis tasks that can be performed with the base package include the generation of descriptive statistics, prediction of numerical outcomes, and prediction of identifying groups. Although SPSS is very popular with social science researchers, its ease of use and add on modules allows it to operate as a cross- disciplinary software package.

It is used by market researchers, health researchers, and survey companies, government, education researchers, and others. The benefit of SPSS is effective data management, wide range of options, better output organization. In Civil Engineering field, Statistical package for the social science (SPSS) software is mainly used for analyzing the questionnaire.

Details of questionnaire collection

Parameters	Mean
Nominated subcontractors by owner	2.90
Improper site coordination	2.83
Mistakes/rework during the construction stage	2.83
Inadequate contractor experience	2.93
Lack of proper qualified and experienced members among the contractor's team	2.87
Structure of the company linking to the project	2.70

Lack of communication between different subcontractor trades involved in construction	3.10
Conflicts between different subcontractors' schedules during project execution	2.77
Absence of frequent site meetings chaired by higher officials to have better coordination between engineers	2.97
No financial incentives for the sub-contractors to finish ahead of schedule	2.80
Deficiencies in initial planning and scheduling schemes made	2.97
Change in the construction methods followed from the actual plan	2.63
Lack of database in estimating activity duration and resources	3.07
Poor judgment and experience of involved people in estimating time and resources	2.80
Non-availability of professional construction management experts	3.03
Inadequate early/primary planning of the project	2.77
Unrealistic schedules for construction	2.93
Accidents occurred during construction	2.67
Traffic control regulations practiced at the construction site	3.13
Lack of training people and management support in the client project team	2.57
Inefficient in handling the conflicts between the contractor and consultant	2.67
Slow decision making	2.67
Payment: delay in making payment to the contractor after the completion of milestones	2.97
Absence of strong administrative will to complete the project as per the planned time and budget	2.73
Design changes by owner or agent during construction	2.97
Payment: delay in making monthly payment	2.93
Site clearance for the work to proceed	3.17
Project delivery systems used (design-bid- build, design-build, cost plus, lump sum, etc.)	3.00
Obtaining permits from concerned authorities to start work	3.17

Change in BOQ's or scope of work during construction	2.57
Lack of adequate man power at construction site as expected/planned	2.80
Decline in labour productivity	2.90
Lack of skilled manpower	3.03
Delay due to waiting time for approval of sample materials	2.77
Revisions in designs during the time of construction	2.83
Waiting time for approval of tests and quality- control inspections	2.83
Delay in preparation and approval of shop drawings	2.97
Ambiguity in the specification written or conflicts in interpretation by owner and contractor	2.70
Negotiations on cost and durations of the project for securing contracts	2.83
Contract management/disputes between owner and contractor	3.10
Differential site condition clauses written in contract	2.90
Site closure issues between client and contractor	3.00
Joint ventures in a project	2.67
Lack of quality material/material not matching the required specification	4.35
Damage to materials during storage at the construction site	4
Delay in the delivery of special manufactured materials	3.6
Shortage in the availability of material	3.4
Equipment availability as planned	2.53
Unskilled equipment operators	2.63
Equipment breakdown/maintenance	3.00
Extreme weather conditions	2.27
Unfavorable/unexpected weather conditions	2.80
Problems with the neighbors around the site	2.67
Unforeseen site conditions	2.70
Insufficient utilities available on site	2.63

Inflation: escalation of material prices	2.63
Increase in labour wages	3.17

Project rank

<i>S. No</i>	<i>Delay Factors</i>	<i>Rank</i>
1	Material related	1
2	Economic related	2
3	Labor related	3
4	Project planning and control related	4
5	Contractor related	5
6	Contract related	6
7	Client related	7

Frequency Tables for Material Related Factors**1. material/material not matching the required specification****Lack of quality**

	Frequency	Percent	Valid Percent
1	3	7.0	7.0
2	7	13.0	13.0
3	16	50.0	50.0
4	4	30.0	30.0
Total	30	100.0	100.0

Inference

The inference made from response of construction employees and owners 7% are poor. Rating time and cost overrun in construction projects are due to "Lack of quality material/material not matching the required specification", 13.0% Of the respondent says fair, 50 % of the respondent says good, 30% of the respondent says Very good.

2. Damage to materials during storage at the construction site

	Frequency	Percent	Valid Percent
Valid 1	4	15.0	15.0
2	1	15.0	15.0
3	10	50.0	50.0
4	8	15.0	15.0
5	2	5.0	5.0
Total	30	100.0	100.0

Inference

The inference made from response of construction employees and owners 15% are Very poor Severity rating of time and cost overrun in construction projects are due to “Damage to materials during storage at the construction site”, 15% Of the respondent says poor,50 % of the respondent says fair,15% of the respondent says good, 5% of the respondent says Very good.

3. Delay in the delivery of special manufactured materials

	Frequency	Percent	Valid Percent
Valid 1	2	5.0	5.0
2	3	15.0	15.0
3	20	66.7	66.7
4	3	6.6	6.6
5	2	6.7	6.7
Total	30	100.0	100.0

Inference

The inference made from response of construction employees and owners 5% are Very poor Severity rating of time and cost overrun in construction projects are due to “Delay in the delivery of special manufactured materials”, 15% Of the respondent says poor,66.7 % of the respondent says fair, 6.6% of the respondent says good,6.7% of the respondent says Very good.

4. Shortage in the availability of material

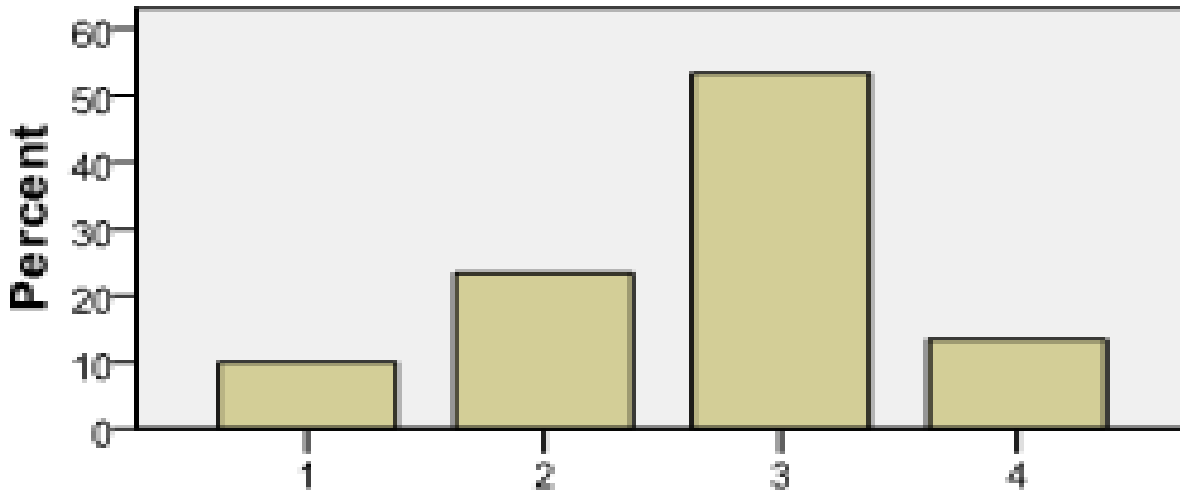
	Frequency	Percent	Valid Percent
Valid 1	5	10.0	10.0
2	15	25.0	25.0
3	5	30.0	30.0
4	9	25.0	25.0
5	1	10.0	10.0
Total	30	100.0	100.0

Inference

The inference made from response of construction employees and owners 10% are Very poor Severity rating of time and cost overrun in construction projects are due to “Shortage in the availability of material”, 25% Of the respondent says poor, 30 % of the respondent says fair, 25% of the respondent says good, 10% of the respondent says Very good.

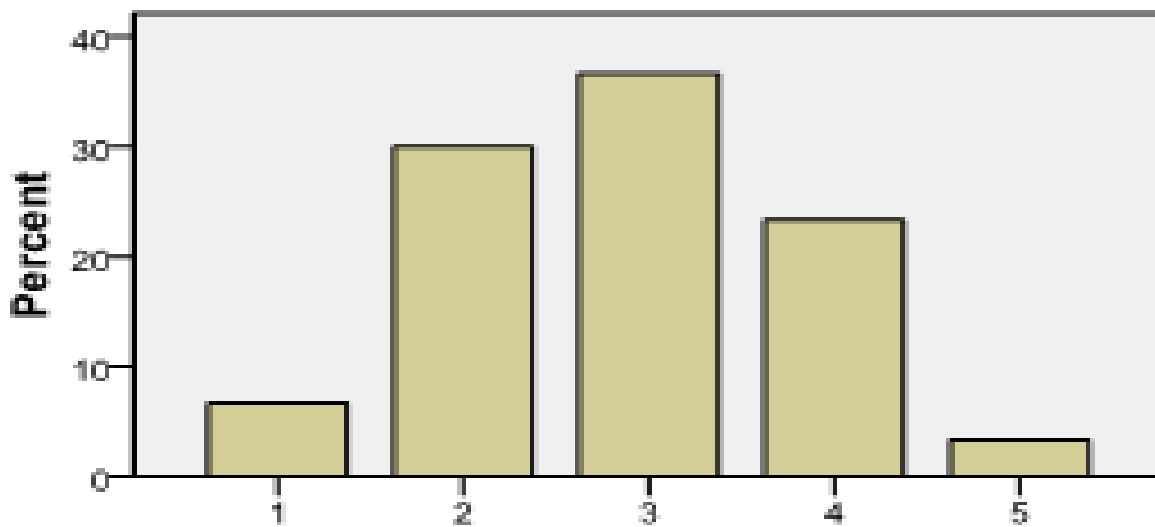
Bar Charts for Material Related Factors

1. Lack of quality material/ material not matching there required specification;



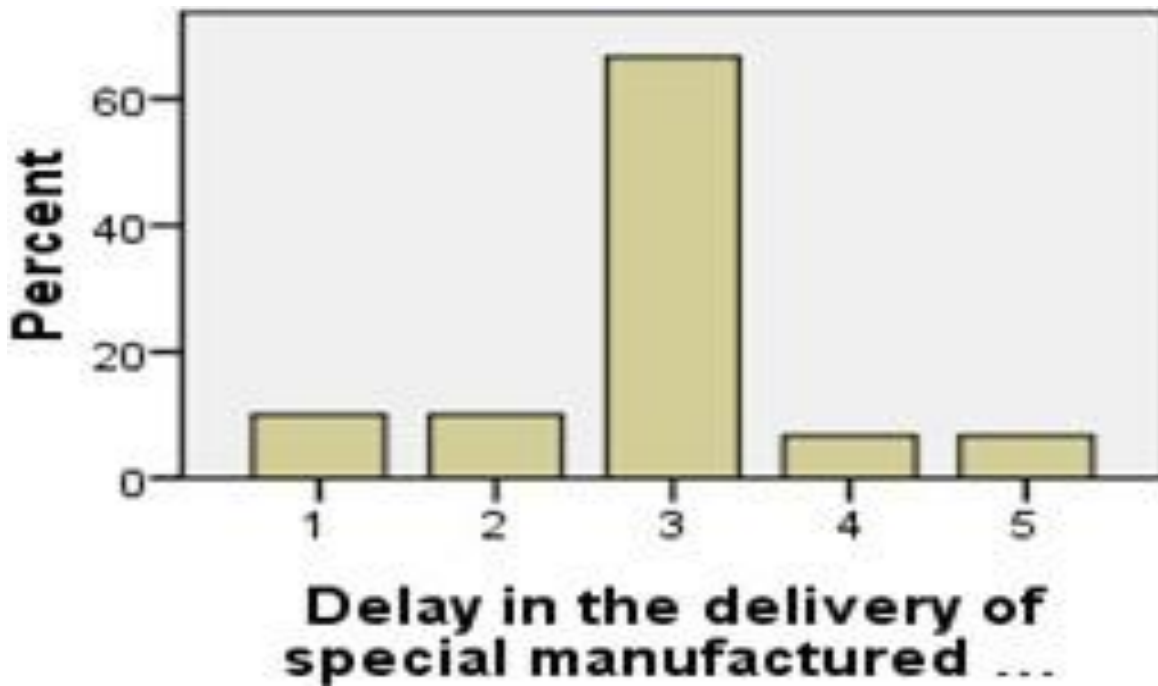
Lack of quality material/material not ...

2. Damage to materials during storage at construction site:

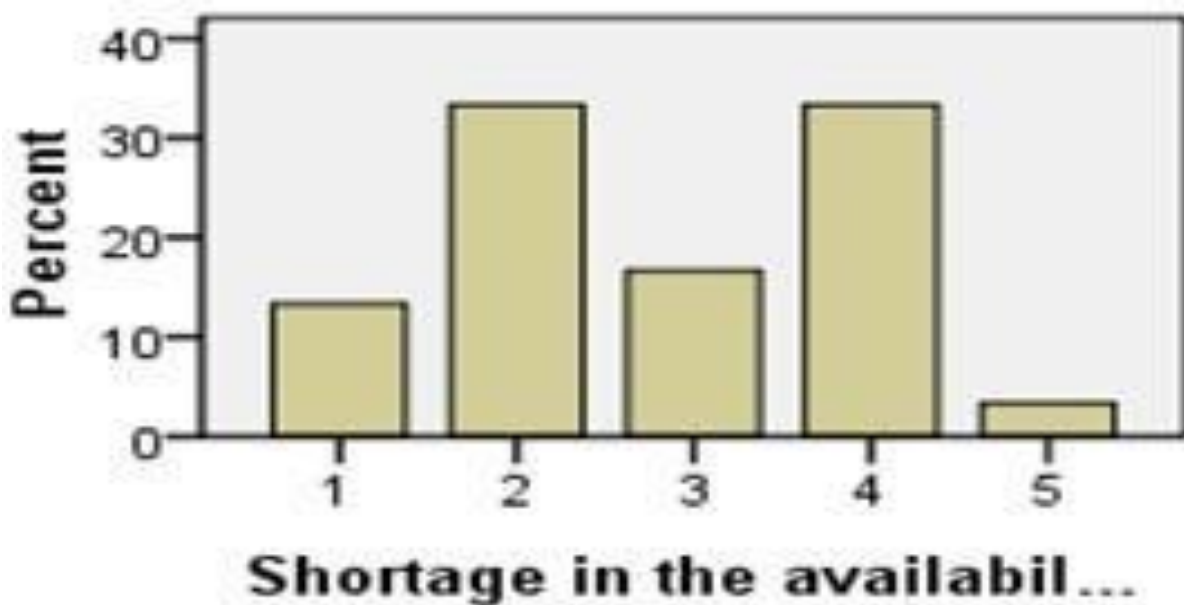


Damage to materials during storage at the construction site

3. Delay in the delivery of special manufactured materials



4. Shortage in the availability of material



5. CONCLUSION

Efficient and effective management of a project is the key attribute towards successful, timely and profitable completion of the project. Planning, monitoring, controlling cost and Quality are the major components of project management and intelligent use of these tools gives a cutting edge to the execution of projects– whether of similar type or different. In this study, it was understood that the risk severity varied in construction projects. In construction project, top risk attributable to material mobilization.

- The top seven factors that affected cost are mentioned below.

1. Unsettled or lack of project funding.
2. Delayed or long process times by other authorities.
3. Unsettled or lack of project planning.
4. Errors in construction work.
5. Lack of identification of needs.
6. Inexperienced or newly qualified consultants.
7. Investing the money of project A into other project B.

• To determine the owners, consultants and contractors' perception towards the relative importance of key Cost performance indicators in construction projects in order to evaluate their performance.

1. Due to various challenges and problems in construction industry especially in the production and delivery of sustainable Construction. Completion of construction projects has become an issue not only to contractors and professionals but other stakeholders including clients, sponsors and end-users.

2. Thus, this research evaluates performance indicators for construction projects from the perspective of contractors and consultants. This is to improve the performance of construction with a view to enhancing the quest of construction industry of contributing positively to the economy and overall growth of the nation.

6. FUTURE SCOPE

How to Avoid Cost Overrun Cost overrun, or any sort of expense that pushes a project past the agreed-upon budget, is something of which a project manager must be constantly vigilant about. There are several ways one can prevent cost overrun.

Here are seven that help keep a reign on your budget:

1. Project Planning

The best way to minimize cost overrun is to plan before executing of work. The more accurate your estimates are the more you stay in budget. There are risks, but those can be Minimize and risk management plan get reduce. When planning for any project, you must consider all possible scenarios, using historic data, interviews and experience. Once that plan has been detailed, have it signed off by the stakeholders of the project.

2. Vendor Selection

Projects are going to contract with outside vendors. We should aware of the quality and material type before placing of order. A relationship with any outside vendor opens your project up to cost overruns that are often beyond your control. Therefore, it's critical to do due diligence before relationships get concrete. First understand the holding capacity of the vendor, and then decide is he going to fulfill the requirement.

3. Project Planning Tool

A good tool makes project manager's work easier, increase productivity of the work, and increase efficiencies. It will also help in keeping cost at a minimum. A scheduling chart will help the project to be on track and prevent cost overrun.

4. Stakeholders Updated

There should be a clear line of communication between stakeholders and project managers, delays must be avoided. Delays lead to cost overrun. The risk will start on the wrong track at the wrong time. This will waste time and can make project off track. Stakeholders as well as teams members should have proper communication, and each of them should get the right information.

5. Monitoring the Progress of work

The real-time data should be monitor and should also keep track on progress of the work. Before identifying and problem become problems that threaten to take the project off-track and over-budget they can be resolved. The real-time dashboard measures not only the project's progress, but the team's workload, timelines for planned and actual completion, including project slippage, and much more.

6. Reassign Resources

You're going to respond by reallocating resources if you discover a project spending more than budgeted. But you can also prepare for that scenario by evaluating resources beforehand, and placing them where they'll be most effective. This is especially true with your most valuable resource: your team. By assembling the most experienced and skilled team members you can have a more productive and efficient project. These resources might cost more, but if you've done your planning and set aside funds you'll save money on the backend when there are fewer issues to handle.

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