

Factors Affecting Cost and Quality of Construction Projects: An Empirical Study of Project Managers

Omdeep Gupta

Asst. Professor, School of Management, Graphic Era Hill University,
Dehradun Uttarakhand India

Abstract

The construction sector is a dynamic, complex industry with many global concerns. The success and profitability of construction projects are impacted by problems like low productivity, project delays, and poor quality. Numerous things contribute to these issues, such as a shortage of resources, ferocious competition, and a lack of cooperation. To increase productivity and overcome delays and quality problems, it is essential to address vital variables such project management, stakeholder cooperation, training, and effective communication. The construction sector can strive for increased performance, on-time project completion, and customer satisfaction by employing reliable project control techniques, risk assessment procedures, and quality assurance measures.

Key Words: Construction industry, Project management, Productivity, Project delays, Quality deficiencies.

Introduction:

Worldwide, the business climate for construction companies is continually evolving. Problems with survival can arise when one can't adjust to this intricacy. Due to escalating user demands, environmental awareness, a lack of resources, and intense competition, contractors must perform better. The complicated construction sector is vital to the advancement of society. The local construction industry is crucial in many nations around the world, but it frequently encounters problems such a lack of materials, design changes, inadequate coordination, inefficient monitoring, and a lack of leadership abilities. Politics and the economy both have an impact on the success of projects. The achievement of a project can be evaluated using metrics related to duration, price, quality, client happiness, and more. Performance dimensions are influenced by a variety of project parameters. While cost is a poor predictor of time performance, factors like participant cooperation have a major impact on project cost performance(Enshassi et al., 2009).

With a considerable contribution to India's GDP and faster yearly growth over the previous five years, the construction sector has been a key driver of economic expansion in India. But the industry struggles with issues like low production, little mechanisation, and a lack of competent workers. Additionally, India's building projects consistently score poorly in terms of cost, timeliness, and quality. Causes and variables affecting schedule performance in the Indian construction setting are looked into because a large percentage of projects experience delays. Factors causing construction delays have been identified and their linkages are analysed using statistical techniques, and forecasted on how they will affect delays using a regression model. The accomplishment or lack thereof of construction projects is correlated with a number of traits. Some of these features include disagreements among project participants, a lack of comprehension and expertise, poor unique to the project traits, a lack of partnership, detrimental economic status and climate factors, tardiness in decision-making processes, fierce competition during the procurement stage, and a shortage of time for bid preparation. The eight subjects into which delay factors are broken down include project-related, client-related, creative team-related, contractor-related, supplies, labour, plant and equipment-related, and external factors. Poor risk management, inadequate oversight, unforeseen site conditions, sluggish decision-making that results in variations, and essential variation works are the five main delay factors in general. Clients, consultants, contractors, and outside causes can all create delays, with design variances being a major problem. Numerous things, including issues with finance and payments, poor contract management, alterations to the construction site, and a lack of resources, can result in delays and cost overruns. (Doloi et al., 2012).

Literature Review:

Despite the availability of project control techniques and technologies, the construction sector still has trouble completing projects on time and under budget. Project delays and cost overruns have been linked to a number of factors, including inadequate contract management, financial difficulties, site condition changes, material shortages, design changes, and labour productivity. Global analyses of these issues have been done through extensive surveys and case studies. Improving project control and guaranteeing effective outcomes in the construction sector require addressing these factors (Olawale & Sun, 2010). By concentrating on the budget, schedule, quality, safety, and stakeholder satisfaction of construction projects, project management plays a critical role in maximising their success. The success of a project is influenced by underlying problems known as critical success factors (CSFs). Competence, commitment, coordination, and project-management activities are examples of human-related CSFs, as are monitoring and feedback. An efficient statistical tool for examining the connections between these variables and project performance is structural equation modelling (SEM). Confirmatory factor analysis (CFA), which evaluates model fit, and regression analysis, which explains variation, are combined in SEM (Tabish & Jha, 2012).

In India, the construction sector has a long history and provides a sizable number of jobs. The industry has been determined to have poor risk assessment practises when compared to other sectors. This is concerning given that building projects naturally include risks and significant investments, which raise the likelihood of associated concerns. Different approaches and models have been created to assess and reduce risks in construction projects in order to address this issue. These strategies seek to strengthen project outcomes and risk management procedures. Risk rating, danger and opportunity assessment, uncertainty estimation, risk quantification, and decision-making frameworks are a few of the often-used methodologies. The Analytic Hierarchy Process (AHP), which enables stakeholders to prioritise risks based on their relative importance and make informed decisions in accordance with that priority, is one extensively utilised method. Another method that handles the inherent uncertainties in construction projects is fuzzy set theory (FST), which weighs several options and gives probabilities to various outcomes. Decision Support Systems (DSS) are computer-based systems that help with risk assessment and management and offer useful insights. These techniques have also been used in relation to multinational building projects. Effective risk management is even more important in cross-border business endeavours because of the complexity involved. When used in these projects, AHP, FST, and DSS have shown useful for analysing and mitigating risks in a variety of geographical, cultural, and regulatory contexts. The construction sector is constantly working to improve risk management procedures. This entails creating thorough frameworks for risk assessment, boosting knowledge and instruction on risk management, and encouraging the adoption of cutting-edge technologies and digital solutions. Construction project stakeholders can reduce possible hiccups, optimise resource allocation, enhance project outcomes, and guarantee worker and public safety by incorporating effective risk management practises (Dixit & Sharma, 2020).

Both developing and developed nations' economies heavily rely on construction projects. With the government providing a sizable amount of the budget to this sector, the construction industry has seen enormous growth in developing nations. However, construction sector in developing countries have low productivity and efficiency, which makes it dependent on subcontractors to save costs. Because they are compensated according to the amount of work performed, subcontractors are encouraged to work effectively. The use of subcontractors to supply labour while the primary business provides materials and resources is becoming more widespread globally (Ghoddousi & Hosseini, 2012).

Depending on the point of view, there are numerous ways to describe quality in the construction industry. It can be used to describe a degree of performance that complies with predetermined requirements or satisfies set standards, as well as providing value for the money invested. For construction organisations, maintaining quality requires effectively managing resources within a defined budget while satisfying the demands and expectations of customers. Systems for quality assurance and control are put in place to guarantee quality in building projects. These systems are made to provide practises and routines that ensure conformity to industry norms and rules. Construction businesses seek to decrease errors and defects, generate consistent and reliable results, and improve overall project performance by employing quality management systems. But a number of things can affect how well building projects turn out. The availability and suitability of necessary

resources can be compromised by material shortages or delays, which will impact the output. If they are not effectively communicated and carried out, design changes can cause quality to be compromised and cause departures from the original plan. Financial constraints may also have an impact on the quality of building since cost-cutting strategies may result in the use of subpar materials or poor construction techniques. Theoretical variables have also been found to contribute to quality problems in construction projects in different nations. These reasons include a lack of proper project stakeholder communication, insufficient monitoring or oversight throughout the building phase, and inadequate training and skill development for construction personnel. These flaws can cause misunderstandings, mistakes, and poor decision-making, all of which can lower the project's overall quality. A comprehensive strategy that prioritises efficient project management, transparent communication channels, appropriate training and skill development programmes, and a dedication to continual improvement is needed to address these problems. To achieve a high level of construction, construction businesses must give priority to quality assurance and control procedures, encourage teamwork among project participants, and make investments in the training of their personnel (Abas et al., 2015).

In construction projects, achieving quality can be difficult, especially in underdeveloped countries. Productivity can be increased by identifying elements such as managerial commitment, training, teamwork, material delivery, and stakeholder cooperation. The effectiveness of the project and the level of client satisfaction are substantially impacted by variables like competency, client consultation, monitoring, planning, information flow, and payment delays (Oke et al., 2017).

It is advantageous to accurately anticipate the client's financial commitment to a project since it enables alternative actions and provision planning. The client's financial resources and preferences should be taken into account, particularly for major projects involving numerous units. Project cost and time show significant volatility, indicating instability. The timeline and cost of construction projects are influenced by a number of issues, including price fluctuations, inaccurate estimates, delays, additional labour, unscrupulous practises, contract administration, subcontractors, and failing to comply with contract conditions (Ibironke & Ibironke, 2011). Construction projects' quality is influenced by a number of factors, including the client's description of their demands, the procurement and tendering procedures, the designer's performance, the accuracy and coherence of the manufacturing information, and the outcomes of the construction stage. Contractors are crucial for achieving stated quality criteria despite usually facing inspection and control challenges (Shafiei et al., 2020).

Objective:

To find the Factors Affecting Cost and Quality of Construction Projects

Methodology:

The nature of the study is descriptive where data is collected from the 220 respondents to factors affecting cost and quality of construction projects. A checklist technique was used to examine and depict the data. In a checklist technique, respondents designate “Yes” or “No” for all the questions.

Data Analysis and Interpretations:

Table 1 Factors Affecting Cost and Quality of Construction Projects

| SL No. | Factors Affecting Cost and Quality of Construction Projects | Yes | % Yes | No | % No | Total |
|--------|---|-----|-------|----|-------|-------|
| 1 | Construction projects are impacted due to low productivity, project delays and poor quality | 183 | 83.18 | 37 | 16.82 | 220 |
| 2 | Project delays linked to inadequate contract management, financial difficulties, and site condition changes | 193 | 87.73 | 27 | 12.27 | 220 |
| 3 | Projects can affect due to material shortages, design changes and labour productivity | 188 | 85.45 | 32 | 14.55 | 220 |

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|---|---|-----|-------|----|-------|-----|
| 4 | It helps in providing sizable number of jobs | 195 | 88.64 | 25 | 11.36 | 220 |
| 5 | Construction projects include risks and significant investments | 199 | 90.45 | 21 | 9.55 | 220 |
| 6 | Stakeholders try to optimise resource allocation, enhance project outcomes, and guarantee worker and public safety | 190 | 86.36 | 30 | 13.64 | 220 |
| 7 | In construction industry maintaining quality requires effectively managing resources within a defined budget to satisfy the demands and expectations of customers | 213 | 96.82 | 7 | 3.18 | 220 |
| 8 | The availability and suitability of resources can be compromised by material shortages or delays, which will impact the output | 205 | 93.18 | 15 | 6.82 | 220 |

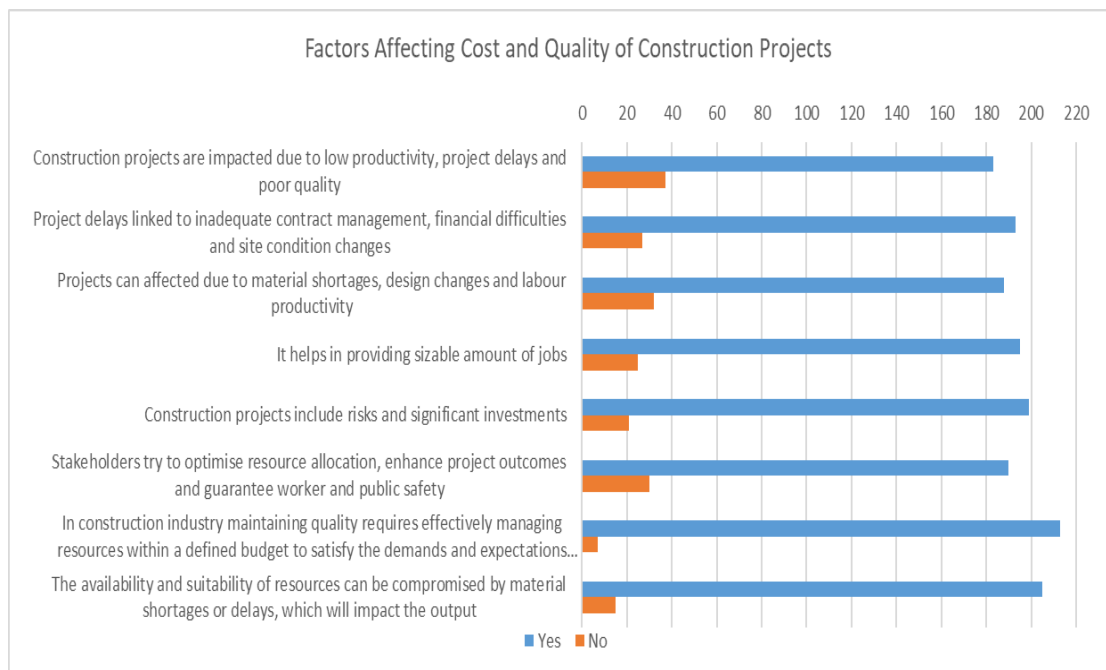


Figure 1 Factors Affecting Cost and Quality of Construction Projects

Table 1 and Figure 1 show the factors affecting cost and quality of construction projects. It was found that around 96.8% respondents believe that construction industry maintaining quality requires effectively managing resources within a defined budget to satisfy the demands and expectations of customers, The availability and suitability of resources can be compromised by material shortages or delays, which will impact the output (93.1%), Construction projects include risks and significant investments (90.4%), It helps in providing sizable amount of jobs (88.6%), Project delays linked to inadequate contract management, financial difficulties and site condition changes (87.7%), Stakeholders try to optimise resource allocation, enhance project outcomes and guarantee worker and public safety (86.3%), Projects can affected due to material shortages, design changes and labour productivity (85.4%) and Construction projects are impacted due to low productivity, project delays and poor quality (83.1%).

Conclusion: -

The construction sector operates in a dynamic and difficult environment where success depends critically on criteria including productivity, project performance, and quality. To achieve intended results, it is crucial to address challenges with resource management, coordination, stakeholder

cooperation, and efficient project supervision. The business sector can work towards increased performance and client satisfaction by putting a strong emphasis on risk assessment, quality assurance, and project management procedures. The total development and success of the construction industry will be facilitated by ongoing efforts to increase efficiency, reduce risks, and guarantee quality.

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