

Construction Project Management

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Abstract— The aim of this study is to examine construction project management practices in Kerala, a region where the construction sector holds significant economic, social, and cultural importance. By focusing on various aspects of project management, this research identifies challenges and proposes solutions to enhance project management practices. Employing both qualitative and quantitative methods, the study involves consultations with specialists and interviews with 15 project managers across different regions and project categories in Kerala's construction sector.

Analysis of the interview data reveals several key issues faced by construction project management in Kerala, including inadequate planning, ineffective project management, and poor communication among stakeholders. These findings underscore the need for a structured framework to streamline project management processes, aiding managers in prioritization and identifying areas for improvement. Furthermore, the study emphasizes the importance of aligning project objectives with on-site implementation and establishing a cohesive system for project execution, documentation, and future reference.

Key words: Construction management, project management, manager criteria, construction project

I. INTRODUCTION

The trajectory of Kerala's future hinges on the endeavors they undertake today, and the goals set by Kerala, alongside its means and resources, will shape the nation's destiny. Kerala has faced significant challenges in recent decades due to occupation, closures, and resource constraints, leading to stagnation in various facets of societal development and progress.

Despite these challenges, both commercial and residential construction activities in Kerala are burgeoning to meet the increasing demands of its populace and align with global advancements. To

propel Kerala's construction sector forward, meticulous study and thorough preparation of construction projects are imperative to achieve optimal outcomes and steer towards the envisioned future objectives.

Failure isn't solely about making mistakes; it also encompasses instances where tasks are almost executed correctly. This concept underscores the importance of understanding the most effective approaches to project management in construction projects, paving the way for a new era of thinking that adds value to the construction industry. Driven by these considerations, I embarked on a study to examine how projects are managed in Kerala. My aim was to identify the key elements and challenges impacting the construction sector and propose a framework tailored to address the evolving needs and concerns specific to Kerala, compared to other states. This framework aims to assist managers in meticulously planning and executing construction projects, minimizing risks, and achieving successful outcomes of high quality.

II. LITERATURE REVIEW

The construction sector plays a pivotal role in bolstering the economies of all states. It must remain adaptable to navigate the ongoing changes in the global landscape, including social, economic, and technological shifts impacting all industries. Today's opportunities and challenges in construction differ significantly from those of the past century. Client demands, company strategies, and workforce expectations evolve over time, necessitating a continuously evolving vision for the construction industry. To stay relevant, management practices must also evolve accordingly.

This study aims to address the pressing need for

advancing project management in Kerala, which will, in turn, shape future objectives. Project management is both a science and an art, involving the meticulous planning, organization, and allocation of resources to achieve specific project goals and objectives. It is a complex process that requires the collaboration of multiple stakeholders and a well-defined plan; without these elements, projects risk descending into chaos.

Over the years, the construction industry has faced criticism for its conservative approach and resistance to innovation. Embracing new ideas and creative methods, particularly in adopting technological advancements, is essential for progress. Each phase of the project lifecycle, from inception to completion, holds critical decision points that shape the project's trajectory. These decision points require careful consideration to ensure successful project outcomes and adherence to initial plans.

III. RESEARCH METHODOLOGY

This chapter presents an outline of the methodological approach employed to examine project management in Kerala. It involves studying the prevailing conditions within contracting companies and comparing project management practices with those in similar states. The methodology is informed by a thorough literature review, which aids in determining the analytical approach. Additionally, this thesis offers insights into the interview process, including the target population, sample selection criteria, and the analysis and evaluation of survey data. It culminates in the development of a framework designed to streamline construction project management and presents conclusions drawn from the interviews and the study as a whole.

FIRST STAGE:

This initial phase encompasses conducting a thorough literature review to underpin the survey methodology, pinpoint the research problem, and delineate aims and objectives. Activities within this stage include:

- Crafting a clear problem statement.
- Identifying the research problem.
- Developing the research methodology.
- Studying challenges in other states with similar conditions for comparison purposes.

SECOND STAGE:

The subsequent stage involves data collection, primarily through interviews with contractors engaged in construction projects across Kerala. Given the limited availability of existing data on construction management in Kerala, a significant portion of the research will rely on field investigations and local surveys. Activities in this phase include:

- Clearly defining Kerala as the focal point of the study.
- Collecting relevant data.
- Identifying local barriers and constraints encountered during the survey.
- Making necessary adjustments based on insights gained from a pilot study.

THIRD STAGE:

In this phase, thematic analysis is conducted using data obtained from interviews, insights from the literature review, and information specific to Kerala and its construction industry. Activities within this phase include:

- Thoroughly analyzing the available information and data.
- Drawing conclusions and offering recommendations based on the analysis.
- Proposing avenues for further research.

IV. ANALYSIS & RESULTS

A survey was conducted in Kerala, India, involving interviews with project managers primarily in Thiruvananthapuram, Kollam, Ernakulam, Pathanamthitta, and Alappuzha. Contractors from first, second, and third-class companies were engaged. The respondents were encouraged to provide their opinions freely, and their responses were analyzed, with some quotes directly cited to capture their perspectives. This approach allowed for unrestricted expression, a key feature of free-text analysis.

OBSTACLES AND BARRIERS:

The interview stage presented several challenges:

- Cooperation among contractors was lacking, making it difficult to secure their time for interviews.
- Many contractors either delegated the interview to company engineers or declined to participate altogether.

- Responses to questions often remained superficial, with few engaging in broader discussions about company conditions.
- The scarcity of studies on project management in India posed an additional challenge, as there were limited local references available for consultation.

INITIATION PHASE:

This phase serves as the preparatory stage for a project, during which companies decide on the factors to consider before participating in a bid.

Main considerations for selecting a bid:

- Approximately 29 percent of contractors, allowing for overlap between elements, emphasized cost considerations.
- For first-class companies, resource availability emerged as the most critical factor, followed by corporate cash flow once resources were deemed accessible.
- The combination of resource availability and cash-flow considerations applied to all Indian contractors.

Experience:

To gauge companies' experience and the number of projects undertaken, they were categorized based on the quantity of completed projects. Companies were divided into those completing between 10-50 projects, 50-100 projects, and more than 100 projects. The majority of companies had completed between 10 and 50 projects, indicating that many Indian projects are executed by relatively recently established companies.

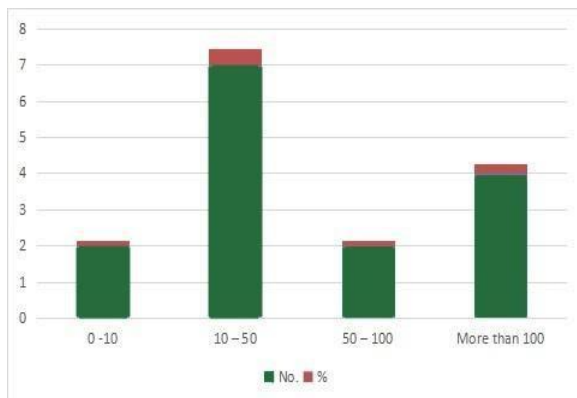


Figure 4.1 Number of projects achieved compared with the classification of the company

Figure 4.1 illustrates that as companies undertake more projects, they are classified at higher levels. Grade A companies accrue greater experience, enhancing their competitiveness in the market. Moreover, this classification often aligns with

government agencies like the Public Works Department (PWD), enabling participation in larger-scale projects.

PLANNING PHASE:

Effective project management begins with meticulous planning, a crucial step in ensuring project success. While comprehensive planning demands time, effort, and resources, its benefits include risk mitigation, waste reduction, and meeting client expectations. Key aspects of planning include:

- Assessing, allocating, and managing risks throughout the project lifecycle.
- Establishing performance metrics and implementing reporting mechanisms.
- Utilizing control mechanisms to manage quality, cost, time, and changes in project management.

A well-executed plan not only facilitates superior design but also minimizes waste and equips the project team to anticipate and manage risks effectively. Integrating design, construction, and maintenance activities is essential for seamless project execution.

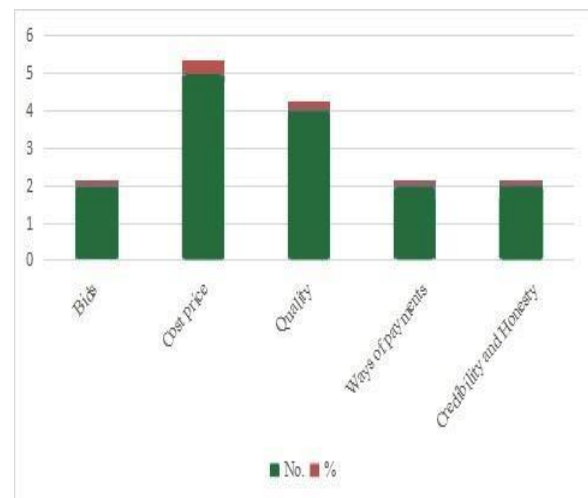


Figure 4.2 Basis to deal with suppliers

When engaging with suppliers, cost emerged as the primary factor of importance, followed by payment methods, such as cash or installment options. Another crucial consideration was the credibility and integrity of the supplier. Quality ranked fourth in importance, with many managers indicating that they adhered strictly to bid specifications. Additional factors mentioned included the inclusion of tax bills in purchases and the supplier's punctuality and adherence to schedules.

EXECUTION PHASE:

Using software:

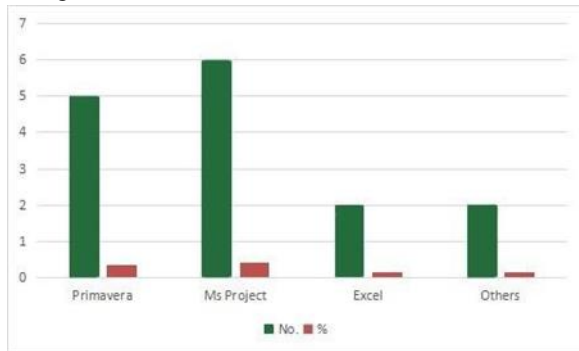


Figure 4.3 Software used by construction companies

Software aids in project management but does not replace it. All project managers unanimously acknowledged the utility of computer software in project management. Microsoft Project (MS Project) emerged as the most commonly used software, followed by Primavera and others. When questioned about the progress of his project using Primavera, one manager stated, "The initial plan no longer aligns with the project's current status due to numerous changes since its inception."

Regrettably, many project managers discussed using software for plan preparation but admitted to not utilizing it extensively or effectively.

Cash Flow:

In interviews, all managers concurred that funding parties, particularly in local government projects, exhibit a lack of commitment to timely bill payments. Bureaucratic procedures and employee apathy exacerbate the issue. Consequently, government projects are perceived as challenging and less preferable compared to opportunities in the private sector.

Main reasons for failure of construction projects:

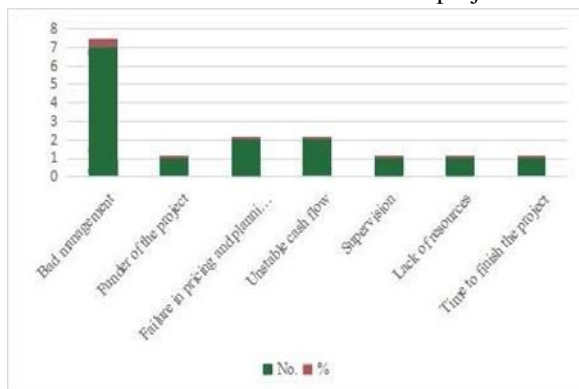


Figure 4.4 Main reasons for project failure

As depicted in Figure 4.6, with the consideration of overlapping and the selection of multiple factors, 43 percent of contractors identified poor management as a primary reason for project failure. Lack of experience followed at 17 percent, with pricing failures at 13 percent. Project managers echoed these sentiments, attributing project failures to several key factors:

- Inadequate feasibility studies at project initiation leading to economic and social challenges.
- Lack of commitment from funding parties to timely bill payments, resulting in cash flow issues.
- Financial instability of contractors managing such projects, indicative of poor management.
- Ineffective supervision, often due to inexperienced engineering oversight.

It's essential to recognize that project failure impacts not only contractors but also owners, designers, and supervisors.

Project Success:

While most project managers deemed their projects successful, some encountered challenges. According to survey responses:

- Completing projects on time and within budget was deemed the most crucial sign of success.
- Personal conviction and satisfaction were also cited as indicators of success.

Although project managers primarily associated success with meeting time and cost objectives, regardless of quality or owner satisfaction.

The primary indicator of project failure, according to 39 percent of respondents, was time-related issues, as highlighted in the chart. Many projects experienced delays, emphasizing the criticality of adhering to project timelines.

Qualifications of Project Managers:

As illustrated in Figure 4.12, 35 percent of project managers prioritize experience as the foremost qualification for project managers, outweighing other credentials.

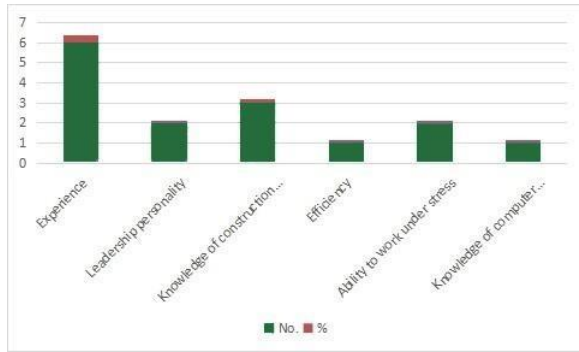


Figure 4.5 Qualifications of a project manager

V. CONCLUSION

The construction industry serves as a pivotal instrument for societal advancement in the modern era. As the world grows increasingly complex and fraught with risks, the management of construction processes likewise becomes more intricate. Project management embodies a blend of administration, planning, experience, analysis, interpersonal skills, leadership, and a dash of luck. In India, the construction sector faces mounting pressure to adapt to future demands and changes, not only due to political instability but also to ensure sustainable development in an ever-evolving world. It is imperative that these changes occur to meet future demands and facilitate successful projects.

The primary objective of this research was to examine the state of project management in India and identify challenges encountered in managing construction projects. To address these challenges, a framework has been proposed to streamline construction project management and achieve both short-term and long-term goals. This framework lays the groundwork for effective construction management practices and aims to support project managers in delivering superior work that aligns seamlessly with strategic and operational objectives.

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