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Impact of Pre-Planning on Time Management in Construction Projects

Mr. Rahul Subhash Gange, Prof Ashok Desai,

[1]Master of Management Study & Alamuri Ratnmala Institute of Engineering and Technology
[2] Master of Management Study & Alamuri Ratnmala Institute of Engineering and Technology

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Abstract –
Numerous construction projects in India are grappling with significant delays, leading to surpassing the initially set timelines and budgets. The term "delay" in this context refers to the extension of time beyond the initially planned completion period. This research initiative aims to identify the most influential factors contributing to delays in Indian construction projects through a combined approach of literature review and a questionnaire survey. The literature review unearthed 103 causes of delays, which were categorized into 8 distinct groups, and identified 8 effects associated with project delays. Notably, authors presented varying rankings for these delaying factors, reflecting diverse perspectives influenced by different native and contextual considerations.

1. The pre-planning stage presents a crucial opportunity to plan numerous aspects, ensuring that the project is set on the right course right from its inception.
2. The objective of this study is to pinpoint various parameters that, when appropriately addressed during the planning stage, can contribute to successful project delivery.

Key Words: Tread; operation; management.

1. INTRODUCTION

A comparative study encompassing development projects in India, China, Bangladesh, and Thailand revealed that construction projects in India exhibited the poorest schedule performance. The research highlighted that, in India, the average schedule overrun is the highest, reaching 55% of the initially planned schedule, surpassing comparable figures in other nations. In a study conducted by Shebob.A, Dawood.N, and Xu.Q (2011), a questionnaire survey was employed to compare construction projects in Libya and the UK. The ranking of delay factors was determined based on the frequency of occurrence and severity scale. The survey results underscored that construction projects in developing countries experience more significant delays compared to their developed counterparts, primarily attributable to technological shortcomings in the developing nations. Another study by Towhid Pourrostam and Amiruddin Ismail (2012) emphasized the extensive research in the field of causes of delay in construction projects. The construction industry, ranking as the second-largest sector, has undergone examination over the past decade through a fundamental survey conducted in Iran. This survey serves as a key input for the socio-economic development of the country, following agriculture. This page offers insights into India's GDP derived from the construction sector, presenting actual values, historical data, forecasts, charts, and perspectives on the causes of delays from both consultants and contractors. Ibrahim Mahamid (2013) conducted a survey specifically focused on the time performance of various construction types, contributing valuable information to the field. The data and statistical releases presented here were last updated in May 2018.

Sr No.	Toipc	Quantity
1	**Actual**	2379.51
2	**Previous**	2198.68
3	**Highest**	2379.51
4	**Lowest**	1855.78
5	**Dates**	2011 - 2017
6	Frequency	Quarterly

2. Literature Review

Ahsan and Gunawan (2010) conducted an independent study that compared the performance of international development projects in India, China, Bangladesh, and Thailand. Their findings revealed that construction projects in India exhibited the poorest schedule performance among these nations. The study highlighted that the average schedule overrun in India is the highest, reaching 55% of the actual schedule, compared to other countries. In a Comparative study by Shebob.A, Dawood.N, and Xu.Q (2011), focusing on construction projects in Libya and the UK, a questionnaire survey was utilized to rank delay factors based on frequency of occurrence and severity scale. The survey results indicated that construction projects in developing countries face more delays than those in developed countries, primarily attributed to technological limitations in the former. Towhid Pourrostam and Amiruddin Ismail (2012) explored the field of causes of delay in construction projects, which has been under scrutiny for the past decade. They conducted a questionnaire survey in Iran to gather insights from consultants and contractors, providing a valuable perspective on the causes of delay in the construction industry.Ibrahim Mahamid (2013) conducted a survey in Saudi Arabia to analyze the

time performance of various construction projects. The study aimed to identify the causes of delays and their significance according to project participants, including owners, consultants, and contractors. The findings indicated that 76% of contractors and 56% of consultants reported an average time overrun between 10% and 30% of the original duration. Moreover, 70% of the projects experienced time overrun, totaling 53 out of 76 projects.J. RajBharath & Prof Siddesh K Pai (2013) pointed out that the Bandra-Worli Sea Link, commissioned recently, exemplifies the challenges in India's project delivery system. Originally planned as a Rs300 crore project to be completed by 2004, it ended up costing Rs1600 crores with a delay of five years.Ruth Apolot, Henry Alinaitwe & Dantindiwensi (2013) conducted a case study concluding that stakeholders in the construction industry should minimize changes in the scope of work, as it has the most significant impact on cost and time overrun. They recommended a shift from traditional contract types to design-build contracts and emphasized the need for improved cash flow on the client's part to reduce payment delays.Ghulam Abbas Niazai and Kassim Gidado (2013) reported that contracts with durations less than 12 months significantly contribute to delays. They identified 'security' and 'corruption' as common causes of delay across all parties involved in construction projects. Poor security posed challenges in implementing projects, leading to delays and increased costs. Corruption emerged as a serious threat to Afghanistan's construction industry improvement, necessitating an urgent need for a legal framework to combat corruption.Anu V. Thomas and J. Sudhakumar (2014) noted that low productivity contributes to delays in construction. Their questionnaire survey in Kerala, India, identified factors influencing construction labor productivity, including timely availability of materials, delayed material delivery, political strikes, frequent revisions of drawings, and timely availability of drawings at the worksite.Nitin Chaphalkar and K. C. Iyer (2014) mentioned that disputes between stakeholders during the construction phase, if not handled properly, can consume time and money, leading to project extensions.Prakash Rao and Joseph Camron Culas (2014) concluded that ineffective planning and scheduling, delays in site mobilization, and delays in subcontractor's work are critical factors affecting project performance, primarily caused by contractors. Client-related factors, such as delays in furnishing and delivering the site and late revisions and approvals of design documents, also contribute to project delays.Owolabi James et al. (2014) conducted a survey using random sampling to identify the most significant causes of delays in construction projects. The findings revealed that 51% of delays are caused by clients, followed by contractors with 36%, and consultants with 13%.ARC Document Solutions (2015) highlighted that document management issues are a major source of delays and time overrun in construction projects.In their approach, clients and contractors visualize the end product or project delivery, create plans identifying all activities, and estimate time requirements and resources for each task. Pre-planning, also known as pre-construction planning or conceptual planning is crucial in achieving project objectives.

3. Data Analysis

In determining the reliability of the balanced questionnaire responses across five perspectives, we employed the internal consistency method as outlined by Nunnally in 1978. This method involves the calculation of Cronbach's alpha coefficient, which is a widely utilized measure for assessing internal consistency or reliability. It is particularly prevalent in questionnaire surveys utilizing Likert scales, aiming to ascertain the reliability of the scale. The obtained Cronbach's alpha value for the conducted questionnaire survey is 0.815.

Table 3: Impact of Contractor on Timely completion of project

Working experiences in yaers	Number ofsample received	Number of sample for this experience	Percentage of sample for this experience
2	26	1	3.8 %
3	26	1	3.8 %
6	26	3	11.54%
7	26	11	42.31%
8	26	5	19.23%
9	26	2	7.69%

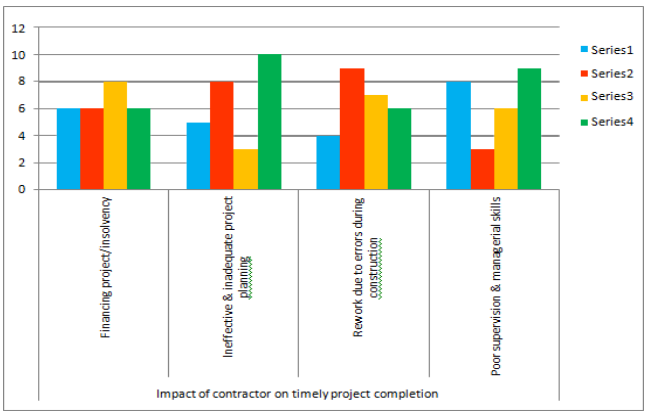

Figure No. 04 Impact of contractor on timely project completion

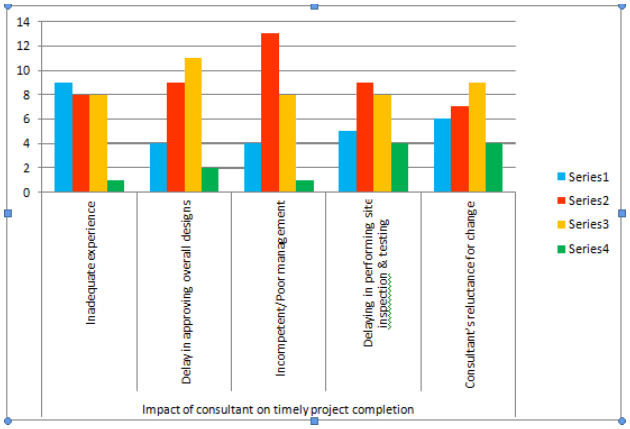

Figure No. Impact of consultant on timely project completion

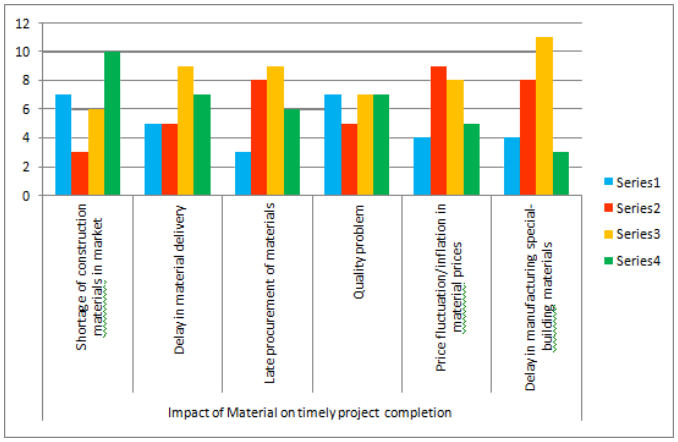

Figure No. Impact of Material on timely project completion

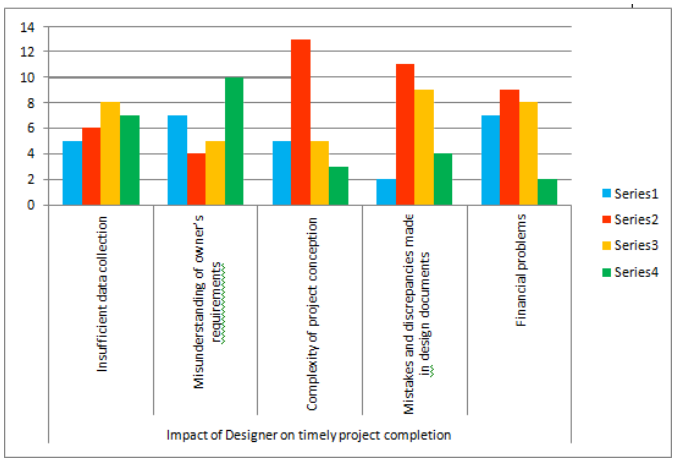

Figure No. Impact of Designer on timely project completion

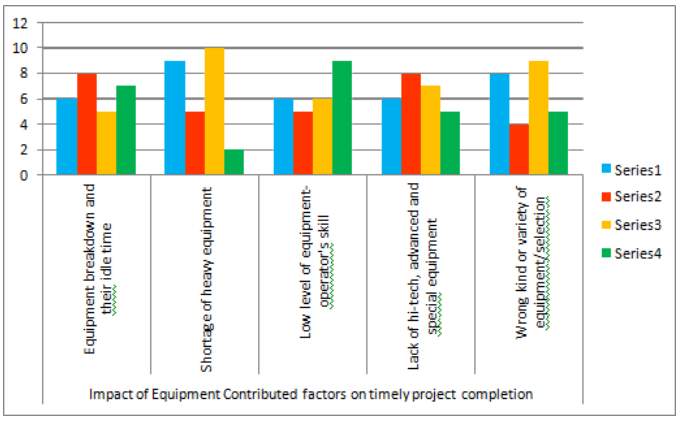

Figure No. Impact of Equipment Contributed factors on timely project completion

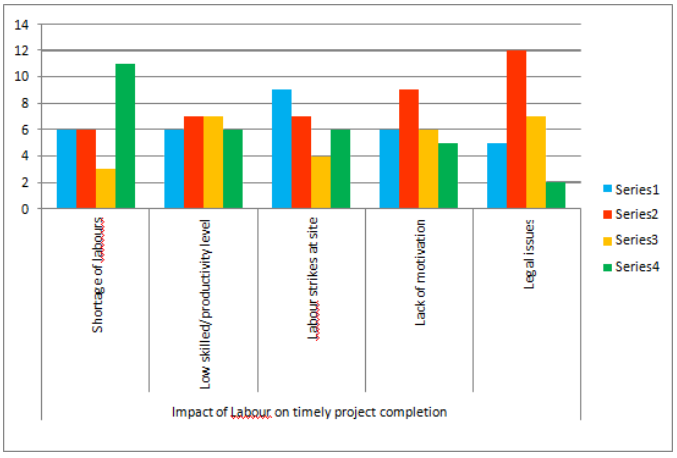

Figure No.Impact of Labour on timely project completion

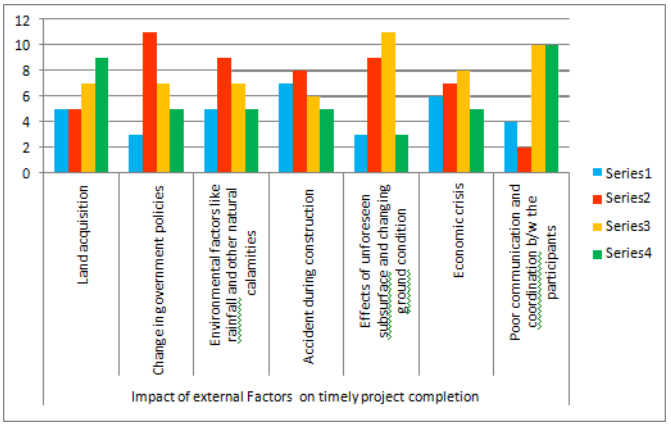

Figure No. Impact of external Factors on timely project completion

4. CONCLUSIONS

This research aimed to assess the influence of pre-planning on time management in high-rise building projects. A semi-structured questionnaire survey was conducted, drawing insights from a comprehensive literature review. The study aimed to address gaps in understanding critical pre-planning factors that impact the punctual completion of high-rise buildings. The identified factors serve as valuable inputs for strategists, enabling the formulation of policies and contracts to mitigate time overruns in projects, consequently enhancing the overall performance and quality of the construction business.

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