

Analysis of Critical Success Factors for Construction Projects

Vishrut Tamgadge¹, D. K. Shinde²

¹Student, M. Tech-Project Management, VJTI Mumbai, India.

²Faculty, Production Department, VJTI Mumbai, India.

Abstract - Each project is led by tenured construction management professionals with a proven track record of expertise, value, creation, quality construction and customer satisfaction. In every construction projects, the main thing required by any user is quality of work, on time or on schedule deliverables & in budget. But the planned work will different from the actual on site work. So the project team is facing some challenging but unexpected changes. Therefore to study this, the critical success factors can work for this. By this we can atleast organize or will minimize the things happening. This study of critical success factors will improve the effectiveness & efficiency of construction work with the condition of sufficient availability of materials. This study is conducted in order to identify, analyze, & rank the various critical success factors which are directly or indirectly related to the construction projects and which will improve and focus the areas which we want to work. The Relative Importance Index method helps us in analyzing the critical success factors.

Key Words: construction, success factors, efficiency, Relative Importance Index.

1. INTRODUCTION

Project is an endeavor undertaken to create a unique product, service, or result for specific period of time [PMBOK-2012]. The construction industry is one of the growing and significant project which contributes towards the economic growth of a nation. The construction industry is the second largest industry after the agriculture [1]. The measures which results in the organization success are called the critical success factors [2]. The factors which are more influential to project success are called Critical Project Success Factors (CSFs) [3]. The project management which gives directions or guide to any construction project helps in betterment or improvement of the success of projects. The construction industry is very much dynamic in nature due to continuous happenings of new challenges and uncertainties in technology, budget and development methodologies. Nowadays residential building projects, real estate are so much clumsy and hard. In construction industry we are need to be very accurate and consistent in information, planning, construction, execution etc. at every stages due to its diversified nature of works and complexity. A project is successfully completed as a result of combination of many activities, interactions, planned and unplanned events, over the lifetime for facility, with circulating participant and methodologies in stable environment.

1.1 Literature Review

The study of project success and the critical success factors (CSFs) is considered to be a mean for improving the effectiveness of project. Performance can be assured by identifying and eliminating the factors that cause poor project outcomes. Thus project managers need better understanding of critical success factors and how to measure them [3].

Quick development in the construction sector can boost up other industrial sectors like cement, paints, fitting and fixtures, chemical and steel industries. Some of the major challenging in the industry is skilled and reliable workers, safety of workers as well as industry and limited time, resource and space constraints. To overcome these and for reducing cost, time and quality challenges in construction, effective project management should be required [4].

Achieving success is highly critical issues for the companies to survive in a competitive business environment. The construction industry is also an area where there is strong competition due to a large number of construction contractors. There have been many factors such as qualified employees, quality workmanship and financial management that can lead to a company success in the construction industry [5].

1.2 Objectives

The main objective of study includes:

- Identification of critical success factors for construction project.
- Define the critical factor which influence or affects the success of construction project.
- Understanding the importance of project management in construction industry.
- Ranking the most important or significant factors in success of construction industry.

2. METHODOLOGY

- Collection of literature review
- Collection of data regarding construction projects
- Identifying the critical success factors
- Conducting surveys by distributing questionnaire

- Collection of responses from questionnaire
- Interpretation of result
- Conclusion

The Relative Importance Index (RII) is a statistical method used to obtain the ranking of diverse factors. As this survey was designed to determine the relative importance of various factors of success, the method was used in this study within various groups (i.e. site engineers, project managers, project coordinators, contractors, trainees, students etc.) The RII is a four-point scale, from 1 (least significant) to 4 (most significant) was used and formed the relative importance indices (RII) for each factor as follows:

$$RII = (\sum W / (A * N)) * 100$$

$$RII = \left(\frac{1 * n1 + 2 * n2 + 3 * n3 + 4 * n4}{4 * (n1 + n2 + n3 + n4)} \right) * 100$$

Where W is the weightage given to every single factor by the respondents (from 1 to 4), A is the highest weight (i.e. 4 in this case), and N is the total number of respondents. The RII value has a range starting from 0 to 100 (0 not inclusive). The higher the value of RII, the more significance is the cause.

The RII was used to rank the relative importance index of the different factors. These rankings made it possible to cross-tally the relative importance of the factors as responded by the groups of respondents. Each individual RII of factors, as responded by all respondents, was used to assess an overall ranking in order to give an overall picture of the critical success factors for construction project.

3. FACTORS AFFECTING PROJECT SUCCESS

There are some groups or categories of identified critical success factors

- Project management related factors
- Procurement related factors
- Client related factors
- Design team related factors
- Contractor related factors
- Project manager related factors
- Business and work environment related factors

These groups or categories include some of the sub-factors regarding it. These critical success factors are the major deciding factors of the success for any construction project. These factors are very much significant for the success of construction projects. These all factors mainly denoting the three major units of any projects i.e. cost, quality and time. These factors are identified, analyzed and ranked according to their significant values.

4. DATA ANALYSIS AND DISCUSSIONS

The collected data from the questionnaire survey was analyzed using Relative Importance index method shows the rank of the factors.

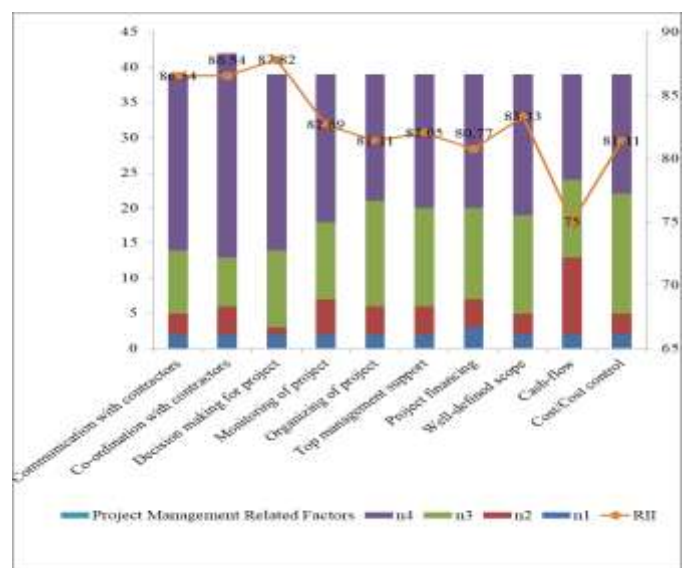


Chart -1 RII Method- Calculation of RII various categories

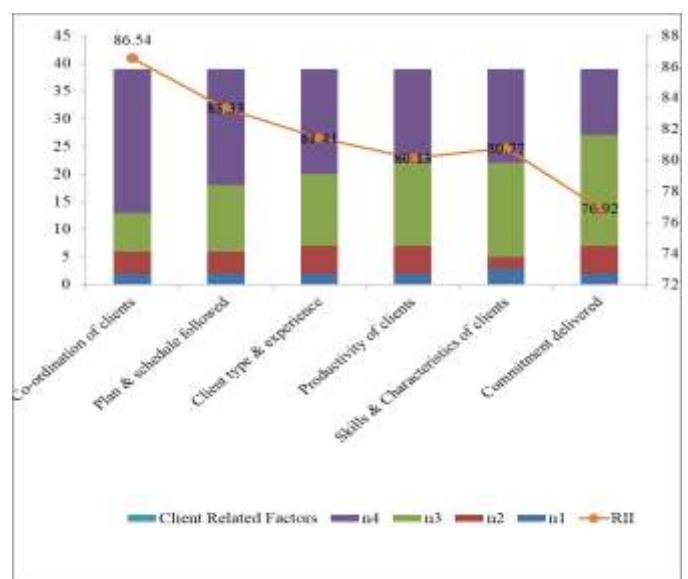


Chart -2 RII Method- Calculation of RII various categories

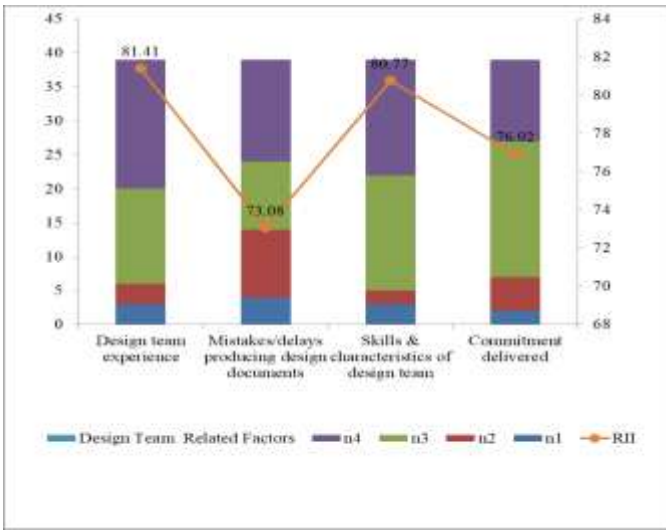


Chart -3 RII Method- Calculation of RII various categories

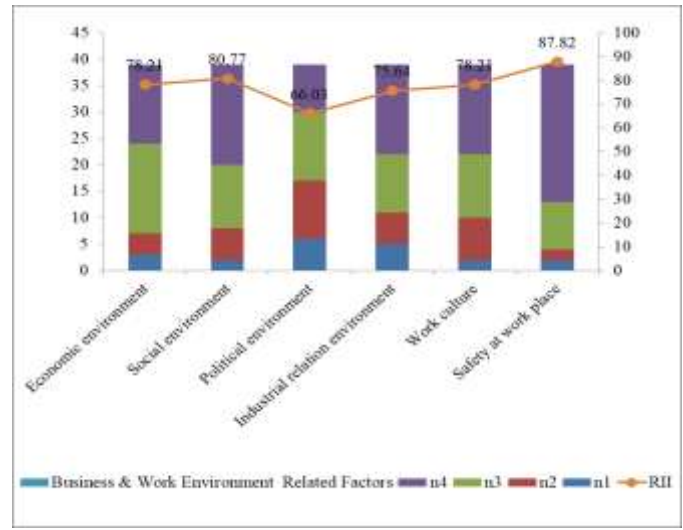


Chart -6 RII Method- Calculation of RII various categories

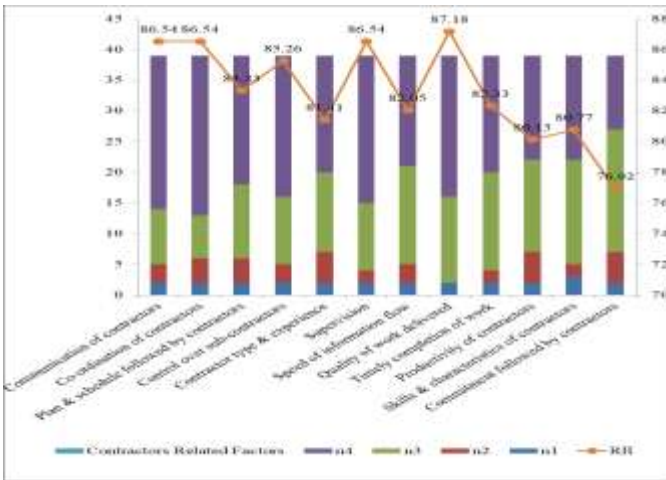


Chart -4 RII Method- Calculation of RII various categories

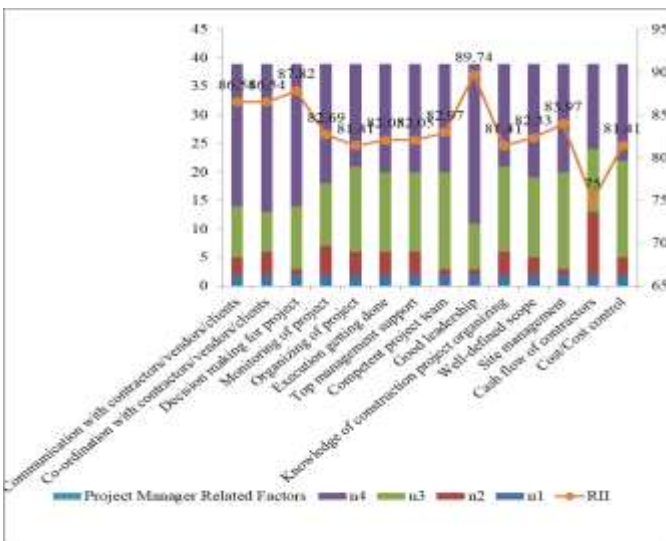


Chart -5 RII Method- Calculation of RII various categories

5. OBSERVATIONS AND RESULTS

Table-1: Critical Success Factors Ranking-Variou Categories

Critical Success Factors	Category of Factors	Relative Importance Index	Ranking
Good leadership	<i>Project Manager Related Factor</i>	89.74	1
Decision making for project	<i>Project Manager & Project Management Related Factor</i>	87.82	2
Safety at work place	<i>Business & Work Environment Related Factor</i>	87.82	2
Quality of work delivered	<i>Contractors Related Factor</i>	87.18	3
Communication with clients/contractors	<i>Project Manager & Project Management Related Factor</i>	86.54	4
Co-ordination with clients/contractors	<i>Project Manager & Project Management Related Factor</i>	86.54	4
Supervision	<i>Contractors Related Factor</i>	86.54	4

Control over sub-contractors	Contractors Related Factor	85.26	5
Competent project team	Project Manager Related Factor	83.97	6
Site management	Project Manager Related Factor	83.97	6
Plan & schedule followed by clients/contractors	Clients & Contractors Related Factor	83.33	7
Timely completion of work	Contractors Related Factor	83.33	7
Well-defined scope	Project Manager & Project Management Related Factor	83.33	7
Monitoring project	Project Manager & Project Management Related Factor	82.69	8
Project execution getting done	Project Manager Related Factor	82.07	9
Top management support	Project Manager & Project Management Related Factor	82.07	9
Speed of information flow	Contractors Related Factor	82.07	9
Cost/Cost control	Project Manager & Project Management Related Factor	81.41	10
Organizing of project	Project Manager & Project Management Related Factor	81.41	10
Clients/contractors type & experience	Clients & Contractors Related Factor	81.41	10

Knowledge of construction project organizing	Project Manager Related Factor	81.41	10
Design team experience	Design Team Related Factors	81.41	10

6. CONCLUSIONS

The initial objective of this research was to identify and defines the critical success factors which are related to construction project. These factors were identified and analyzed by a questionnaire survey. The top 10 factors from all the categories are Good leadership, Decision making for project, Safety at work place, Quality of work delivered, Communication with clients/contractors, Co-ordination with clients/contractors, Supervision, Control over sub-contractors, Competent project team, Site management, Plan & schedule followed by clients/contractors, Timely completion of work, Well-defined scope, Monitoring project, Project execution getting done, Top management support, Speed of information flow, Cost/Cost control, Organizing of project, Clients/contractors type & experience, Knowledge of construction project organizing, Design team experience. This paper concludes to define on these critical success factors which are led to only the success of the construction projects. Though their significance level may be more or less but these all factors are for the success of the project.

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