

Determining and analysis of Critical Success Factors of Construction Project in Pune Region

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Abstract- Many researchers identified several factors related to successful implementation of numerous types of projects. They are project schedules/plans, client acceptance, monitoring and feedback, communication, trouble-shooting, and characteristics of the project team leader. However, according to industry literature outside the construction industry, CSFs should include issues important to the activities of the organization's current operations and future success. The construction stage is where all the project goals of the contractual parties like time, cost, performance, quality, safety and so on are established and put to the examination. The degree of effectiveness of the project management functions and the degree of success of the project goals will determine the degree to which the individual party will perceive the project as being successful from its own viewpoint. Therefore, this study will classify the extent of the relationship between CSFs and project accomplishments to determine the success of a construction project.

Keywords- success criteria, critical success factors, construction projects

I. INTRODUCTION

A construction project is completed successfully as a result of many jobs and interactions, planned or unplanned, over the life of a facility, with changing participants and processes in a constantly changing environment (Sugumaran B. 2014). Certain factors are more critical to project success than others. These factors are called as critical success factors (CSFs). The term "critical success factors," in the context of projects management, was first used by Rockarts (1982) and is defined as these factors gives success on projects (Sanvido et al. 1992). The development and growth of any developing countries depends on successful implementation of new projects. In India, construction industry is the second largest industry after the agriculture for giving employment. The construction industry is progressive in nature due to the changing uncertainties in technology, government budgets, and development processes (Albert P.C.chan2004). The Construction industry of India is an important indicator of the development as it creates investment opportunities across various related sectors. The construction industry has contributed an estimated 670,778 crore to the national GDP in 2011-12 (a share of around 8%) (Mr. A. Gadekar 2013). The

fundamental objective of the use of project management principles is to reduce the time lag and excessive budgets at the time to promote the quality of the final product and services provided. The project team is facing uncertain changes. The study of project success and the critical success factors (CSFs) are considered to be a means to improve the performance of project. However the of project success has remained uncertainly defined in the mind of the construction professionals. In construction industry we are in need for accurate and consistent information at every stage due to the diversified nature of works and complex –inter related activities. Proper planning is essential for achievement of any pre-determined objective. The study of critical CSF's helps the project management practitioners to achieve specific construction performance level. Also CSF's lead to project success and provide a forecasting tool to involved parties to rapidly access the possibility of success the project from their point of view (zarina alias 2014). The unique strength of CSF's is that it considers the change of environment with which manager and organization of company must deal. Also CSF's is specially suitable for top management and for organization development; the develops a consensus between top management for 'what is important to measure in order to gauge the organization success (sumesh s Babu 2015). To examine the factors impacting on project performance, number of studies has been conducted. The most important are escalation of material shortage, high experience and qualification of manager, quality of equipment's and raw material, leadership skill of manager (Adnan Enshassi 2009). The study of critical success factors is a means of improving effectiveness and efficiency of projects. Critical success factors have been identified in various contexts but there is no general agreement. Most of these studies are too generic and pose a question of applicability on a specific industry such as construction (Susil kumara 2016).

II. OBJECTIVES

- Define critical success factors that measures project success
- Identification of critical success factors contributing to success of construction project.
- Evaluate the weightage of eachCSF's using questionnaire survey.

- To ensure the efficiency of construction project by using CSF's.

III. RESEARCH METHODOLOGY

There are various methods for study of success factors for any project like analysis of cluster pattern, analytical network process, and point scale method. However, for this study we will be use Relative Importance Index method (RII) by conducting questionnaire survey through construction industry experts.

CSF's Model for Construction Project:

The initial goal of this research was to identify the factors contributing to the success of project. For this, a comprehensive literature survey was conducted and detailed list of variable factors was prepared. The factors were classified under 10 perspectives adopting the BSC concept. The BSC framework contains the following perspectives:

- 1) Cost
- 2) Time
- 3) Quality
- 4) Productivity
- 5) Client satisfaction
- 6) Peoples
- 7) Health and safety
- 8) Innovation and learning.

The CSF's model comprises a total 46 attributes grouped under above 9 categories. After the conceptual framework is formed, the questionnaire survey is conducted. the interviewee or respondents for this are well experienced construction project manager, site engineer/ office engineer, contractor, owner(with avg. 10 years in the construction industry). For better analysis and result about 20construction sites with different projects are covered in Pune region. As a Pune region is developing fastly in construction and infrastructure development.

R.I.I. Method for CSF's Model

A questionnaire survey is conducted to elicit the attitude of owner, consultant, and contractor towards the factors affecting the performance of construction project. The respondents were asked to indicate by their local experience, level of importance of each one of the identified 46 factors of performance on five –point likert scale, such as

1. Not important
2. Moderately important
3. Slightly Important
4. Very Important

5. Extremely Important

The R.I.I (Relative Importance Index) Methodwas used here to determine perception of main parties involved in construction project towards the relative importance of identified performance factor. The RII Was computed as

$$R.I.I. = \frac{\sum W}{A \times N}$$

Where,

W - Is the weight given to each factor by the respondent's And ranges from 1 to 5;

A – The highest weight = 5;

N – The total number of respondents

IV. RESULT AND DISCUSSION

The main objective of this research is to identify the critical success factor that leading to success for construction company. The questionnaire survey was carried out among the 20 construction companies which are located in Pune city region of Maharashtra and they are operating in local market. All the construction companies have their projects in building, housing and infrastructure Sector. The questionnaire survey was conducted during face to face interview and it consists of total 46 factors. The respondents were asked to evaluate the importance level of the factors and give the weightage according to weightage as explained in earlier.

The following table shows the summary of relative importance index and rank for the performance of construction projects.

Performance factor	R.I.I.	RANK
01) Cost factor		
Cash flow of project	0.86	03
Profit rate of project	0.61	22
Liquidity of organization	0.64	21
Overhead percentage of project	0.67	18
Material and equipment cost	0.75	12
Project labour cost	0.68	17
Project overtime cost	0.58	25
Cost of rework	0.56	26
Regular project budget update	0.69	16
Escalation of material prices	0.70	15
Differentiation of currency prices	0.48	30
Cost control system	0.69	16
02) Time factor		
Site preparation time	0.65	20
Planned time for construction	0.80	08
Percentage of orders delivered late	0.72	14
Time needed to rectify defects	0.60	23

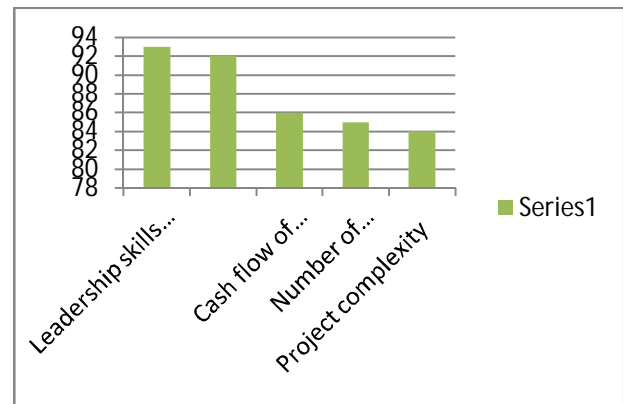
Average delay in regular payments	0.64	21
Unavailability of resources	0.68	17
Average delay because of closures leading to materials shortage	0.67	18
03) Quality factors		
Conformance to specification	0.67	18
Unavailability of competent staff	0.66	19
Quality of equipment and raw materials	0.68	17
Quality assessment system in organization	0.58	25
Quality training/meeting	0.68	17
04) Productivity factors		
Project complexity	0.84	05
Management-labour relationship	0.78	10
Absenteeism rate through project	0.59	24
Sequencing of work according to schedule	0.83	06
05) Client satisfaction factors		
Information coordination between owner and project parties	0.75	12
Leadership skills for project manager	0.93	01
Speed and reliability of service to owner	0.72	14
Number of disputes between owner and project parties	0.85	04
06) Regular and community satisfaction factors		
Cost of compliance to regulators requirements	0.56	26
Quality and availability of regulator documentation	0.67	18
Site condition problems	0.54	28
07) People factors		
Employee attitudes	0.60	23
Recruitment and competence development	0.53	28
Employees motivation	0.72	14
Belonging to work	0.73	13
08) Health and safety factors		
Application of health and safety factors in organization	0.92	02
Reportable accidents rate in project	0.72	14
Climate condition	0.55	27
09) Innovation and learning factors		
Learning from own experience and	0.79	09

past history		
Learning from best practice and experience of others	0.76	11
Work group	0.78	10
Review of failures and solving them	0.82	07

Table shows the top most five factors illustrated that influence the performance of construction project are listed below as per their rank.

Factors	Rank
Leadership skills of project manager	1
Application of health and safety factors in organization	2
Cash flow of project	3
Number of disputes between owner and project parties	4
Project complexity	5

The Graph shows top most five CSF's with their weightage



From the above graphical representation it is clear that, the project manager plays a key role in overall success of construction later. Also safety and health policies must be followed to get the success. Third bar shows cash flow should be considered for continuous progress in project work. Lastly, respondents think that success of project depends on nature of project.

V. CONCLUSION

The main objective of this study is to define critical success factors and their impact on project success. The study of CSF's for construction projects is based on the views of the respondents.

- The Analysis result derived from the study, suggests that leadership of project manager is very important in all types of projects. His quality regarding leadership,

motivation, and decision taking ability ensures the success of project.

- Also Health and safety criteria in organization must be followed, if any accident happens there is very rare chances to permit the remaining work.
- From study it is also noticeable that number of disputes between the parties involved in construction project adversely affects the success rate of project.
- As Per the views of respondents, the success must be achieved if the work should be done as per the planned schedule.
- To improve the overall performance of any construction project, the company should try to implements these CSF's effectively.

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