

Exploratory Study on Critical Success Factors in Construction Projects

Gaurav Thote¹, R.D. Shinde², A.K.Kanase³

¹PG student at RMD Sinhgad School of Engineering, Warje, Pune,

²Head of Department at RMD Sinhgad School of Engineering, Warje, Pune,

³Professor at Sinhgad Institute of Technology and Science, Narhe, Pune.
 (Maharashtra, India)

Abstract- *The construction industry is one of the significant activities, which contributes towards the economic growth of a nation. As construction industry is developing faster, it is very important to give the particular path to achieve the goal. In this developing country, project management can help the organization to plan strategically to reach their target. The aim of this study is to evaluate the critical success factor and failure factor in residential and commercial projects and also to find out the factor that contributes towards the success of the project. The objective of this study is to list out the success factor from literature survey. A Questionnaire survey was adopted and 80 respondents were interviewed. 15 top critical success factors were shortlisted by using (RII) relative important index. The study of critical success factor and project success is the path which leads to increase the productivity of the construction project.*

Key Words: Critical success factor, Failure factor, relative important index.

1. INTRODUCTION

Measures which result in the organization success are called the critical success factors. [1]

Every organization's position is exclusive; evaluation the critical factors has been the subject of a number of studies. So, by evaluation and ranking the critical success factors, this research gives a way out for the managerial planning of the project in Indian construction industry.

The critical success factors are analytical of the subjects which could make the organization successful; if there is a shortage in these fields, the organization would be unsuccessful in achieving their goals. The organizations should focus on the more competent factors or so-called the critical success factors taking into consideration their restrictions.

According to Lehtiranta et al. [2], construction project success associated with multi-firm project organizations taking part in working together adequately. Project success, therefore, should be examined from a more holistic perspective than the traditional measures in terms of budget, schedule, and specifications.

The success of construction projects is a primary subject for most governments, users, and communities. It is

observed that in most of the literature that highlight the role of contractors which directly shows that the success of the project depends on the contractors. [3]

Good performance of an organization can achieve the project success. Different researchers have all mention that human factors played a significant role in determining the success of a project. [4-6]

The main purpose of this study is to recognize the effective factors in the success of Indian construction industry. This factor helps to achieve the success in a project. So it is very important to study critical success factor in the construction industry.

2. LITERATURE REVIEW

Critical success factor (CSF) is a management word for a component which is basic for an organization or project to achieve their target. It is a critical factor or activity required for ensuring the success of a company or an organization. Identifying critical success factors can provide business teams insight into which tasks are truly important, providing points of reference from which to direct the success of a program or project.

The concept of critical success factors was first introduced in the 1960s by researcher McKinsey & Co.'s D. Ronald Daniel, then further expanded on and popularized a decade later by John F. Rockart, an organizational theorist and senior lecturer at MIT's Sloan School of Management. [7]

Table 1. Literature Survey

Author	Title of the paper	Findings
Paulo Cesar Felix Osorio, L.G.Quelhas & L P Zotes	"Critical Success Factors in Project Management: An Exploratory Study of an Energy Company in Brazil,"	<ul style="list-style-type: none"> Understand the relationship among CSF in project management & outcome of the project. Effectiveness and efficiency of project management. The Analysis is done by using Cronbach's alpha coefficient.
A Omran et al	An Evaluation of the Critical Success Factor for the	<ul style="list-style-type: none"> Evaluate most critical success factor in of construction industry in Libya.

	construction project in Libya.	<ul style="list-style-type: none"> Critical success factors were divided into ten groups as follows: 1) Project management related factors 2) Procurement related factors 3) Client related factors 4) Contractor related factors 5) Design team related factors 6) Project manager 7) Work Environment 8) Material 9) Labour and productivity 10) External factor.
Afshin P, Dr. G Asgari	Determining the Critical Success Factors in Construction Project: AHP Approach	<ul style="list-style-type: none"> Identifying and ranking CSFs in the construction project. CSFs in construction project have different priorities and weights. CSFs are as follows: 1) Technical and economic assessment of the project resource. 2) Experience and executive records 3) Project planning 4) Experience of contractor team
M. Saqib et al	Assessment of Critical Success Factors for Construction projects in Pakistan	<ul style="list-style-type: none"> Identifying CSFs to improve the effectiveness of the project. A Relationship between CSFs and KPIs.
Zarina Alias et al	Determining Critical Success Factor of Project Management Practice: A conceptual framework	<ul style="list-style-type: none"> The Relationship between CSFs and Project Performance. Five variables from project success are Project management action, Human factor, Project related factor, External Issues, Project Procedure.

3. Cost Control
4. Risk Management
5. Record
6. Control of cash flow
7. Financial Strength
8. Timely payment of bills
9. Profit margins
10. Client Satisfaction
11. Use of good quality material
12. Teamwork
13. Completion of job on time
14. Qualified Consultants
15. Good Subcontractor
16. Company Image
17. Good advertisement
18. Competitive Pricing
19. Sales office
20. Leadership
21. Experience
22. Communication skill
23. Honesty
24. Political Connection

Following are the Failure Factors:

1. Poor management
2. Inadequate technical manpower
3. Low Productivity
4. Shortage of material
5. Design changes
6. Price fluctuations
7. Inaccurate estimate preparation
8. Variation of work
9. Important site management
10. Slow decision making

The respondents were asked to rate the factors on the five-point Likert scale. The (RII) relative important index method was used to determine the ranks of success factors in the construction industry.

Evaluation of RII as follows:

$$RII = \frac{\sum W}{A * N}$$

Where,

- W = Weightage given by respondents
- A = Highest weight
- N = the total number of respondents

4. DATA ANALYSIS AND DISCUSSION

The data collected from the questionnaire survey was analyzed using RII method. RII method shows the rank of the factors. Following are the results of CSFs and failure factors in construction projects.

3. METHODOLOGY

Critical Success Factors in the construction industry were identified by conducting literature survey. Based on this literature survey factors were divided into 5 main groups and 24 critical success factors were determined which contributed towards the success of project and 11 factors which affect the failure of the project. A Questionnaire survey was conducted to know the participation of the factors towards the success and failure of the project. The questionnaire was distributed between stakeholders of the construction project are as follows: Owner, project Manager, RCC consultant, Contractor, and supplier. Total 80 respondents were taken according to the sample size.

According to literature survey following are the Critical Success Factors:

1. Organization and Planning
2. Quality Control

Table 2. Top 15 CSFs

Sr.	Critical Success Factors	RII
1	Leadership	0.905
2	Client Satisfaction	0.885
3	Organization and planning	0.867
4	Use of good quality material	0.857
5	Experience	0.852
6	Company Image	0.847
7	Quality control	0.845
8	Teamwork	0.840
9	Qualified consultant	0.825
10	Control of cash flow	0.815
11	Completion of job on time	0.805
12	Financial strength	0.785
13	Cost control	0.762
14	Timely payment of bills	0.745
15	Good subcontractor	0.727

Table 3. Failure Factors

Sr. No	Failure Factors	RII
1	Slow decision making	0.887
2	Poor management	0.852
3	Improper site management	0.840
4	Inadequate technical manpower	0.767
5	Inadequate finance	0.742
6	Low productivity	0.717
7	Inaccurate estimate preparation	0.695
8	Shortage of material	0.637
9	Variation of work	0.617
10	Design change	0.557
11	Price fluctuation	0.552

From the above result, the success factors are the most critical success factors in construction projects to achieve the success. It also describes the failure factors which affects the delay in the project which indirectly tends to a failure of the project.

5. CONCLUSIONS

The final objective of this study is to evaluate the critical success factors and failure factors which contribute to achieve the project success and provide strategic planning to rapidly assess the possibility of a successful project.

As CSFs are divided into five groups:

1. Construction Management
2. Financial Condition
3. Quality of work
4. Sales and marketing
5. Top management support

All these factors contribute equally to towards the project success. So it is very important to study the CSFs in construction projects.

LIMITATION

Factors are evaluated from literature survey. Questionnaire survey has been conducted in Pune city.

6. REFERENCES

- [1] Ketelhohn,W.,1998 "What is a key success factor?" European Management Journal, Vol. 16, No.3, and pp: 335-40.
- [2] Lehtiranta, L., Kärnä, S., Junnonen, J.-M., Julin, P. 2012. The role of multi-firm satisfaction in construction project success, Construction Management, and Economics, 30 (6): 463–475.
- [3] Alzahrani, J.I., Emsley, M.W. 2013. The impact of contractors' attributes on construction project success: post construction evaluation, International Journal of Project Management, 31 (2): 313–322.
- [4] Shahhosseini, V., Sebt, M. H. 2011. Competency-based selection and assignment of human resources to construction projects, Scientia Iranica, 18(2):163–180.
- [5] Yang, L. R., Huang, C. F., Wu, K. S. 2011. The association among project manager's leadership style, teamwork and project success, International Journal of Project Management, 29 (3): 258–267.
- [6] Zavadskas, E. K., Vainiūnas, P., Turskis, Z., Tamošaitienė J. 2012. Multiple criteria decision support system for assessment of projects managers in construction, International Journal of Information Technology & Decision Making, 11 (2): 501–520.
- [7] A. Pakseresht, "Determining the Critical Success Factors in Construction Projects : AHP Approach,"

- Interdiscip. J. Contemp. Res. Bus., vol. 4, pp. 383–393, 2012.
- [8] A. Mahmood, F. Asghar, and B. Naoreen, "" Success Factors on Research Projects at University " An Exploratory Study," *Procedia - Soc. Behav. Sci.*, vol. 116, pp. 2779–2783, 2014.
- [9] Z. Alias, E. M. A. Zawawi, K. Yusof, and A. Abra, "Determining Critical Success Factors of Project Management Practice : A conceptual framework," *Procedia - Soc. Behav. Sci.*, vol. 153, pp. 61–69, 2014.
- [10] M. A. A. Abdelnaser Omran and A. O. Gebril, "An Evaluation Of The Critical Success Factors For Construction Projects In Libya," *J. Econ. Behav.*, vol. 2, pp. 17–25, 2012.
- [11] M. Saqib, R. U. Farooqui, and S. H. Lodi, "Assessment of Critical Success Factors for Construction Projects in Pakistan," *First Int. Conf. Constr. Dev. Ctries. "Advancing Integr. Constr. Educ. Res. Pract.*, pp. 392–404, 2008.
- [12] B. Paulo, C. Felix, O. L. G. Quelhas, L. P. Zotes, E. Shimoda, and S. França, "Critical Success Factors in Project Management: AnExploratory Study of an Energy Company in Brazil," vol. 14, no. 10, 2014.
- [13] A. Pakseresht, "Determining the Critical Success Factors in Construction Projects : AHP Approach," *Interdiscip. J. Contemp. Res. Bus.*, vol. 4, pp. 383–393, 2012.