

# Factors Contributing Stalling or Abandonment of Construction Project

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**Abstract-** Astalled construction project can be defined as a project which has been totally abandoned or indefinitely delayed. The uncertain dynamic complex nature of construction industry may hinder the initially stated objectives. It is also not uncommon for construction projects to be delayed, and also in the worst scenario even stalled for various reasons. Many factors contribute to stalling of construction projects are social, economical, political, legal, etc (financial, environmental, administrative, technical). In India, fiscal year 15-19, 688 projects worth RS. 80,899 crores were stalled in the Construction sector comprising Commercial Complexes, Real Estate and Industrial Parks [4]. Abandonment of construction project is a serious issue in the construction industry. Abandonment may happen at any stage of a project lifecycle and cause significant amount of loss to the stakeholders. Valuable resources, cost, time, manpower, etc, are misspent due to the stalling of construction project. This paper tries to identify the major cause of stalled or abandoned projects in South India, and also the contribution of various stakeholder towards the same. All the objective of the study was successfully identified. The reliability value was founded as 0.93 using Cronbach's alpha in SPSS Statistics 22, hence the data considered in the questionnaire is valid. All the 50 risk factors are analyzed using Relative Importance Index RII and 8 critical factors are identified using Qualitative Statistical Analysis. In group analysis, financial problem, contractor, project management were identified as major contributing groups for construction stalling.

**Keywords-** Abandoned projects, Construction industry, Stakeholders, Project finance, Cost, Time.

## I. INTRODUCTION

India's construction industry is an important up-lifter of India's economy, thus it is one of the integral industries in India. The construction sector is a major employment driver, being the second largest in the country, after agriculture. The major segments in the construction industry consist of real estate construction which includes residential and commercial construction; infrastructure development which includes

roads, railways, power, etc [1]. The construction industry has around 9% contribution to India's GDP. The growth rate of construction industry across India was estimated to be 5.65 percent from fiscal year 2015 to 2020, comparatively 2.95 percent from fiscal year 2010 to 2015. In January 2019, India's construction sector had a contribution of over 2.7 trillion Indian rupees to the country's GDP [2].

However, it must be noted that not all the construction projects are completed on time or ahead of schedule. The abandonment of a projects gives an adverse effects on parties such as the developer, contractor, consultant and client [3]. The Construction sector comprising Commercial Complexes, Real Estate and Industrial Parks, saw less number of projects stalled in the last five years. As against this, 967 projects worth Rs 1,06,905 crore dropped in fiscal year 2010-2014; during financial year 2015-2019, totally 688 projects worth Rs 80,899 crore were stalled [4].

## II. AIM AND OBJECTIVES

- i. Analyse the factors that contribute to the stalling of construction project that will be applicable to Indian scenario.
- ii. Identifying the root cause of the problems.
- iii. Verifying the factors through questionnaire survey.
- iv. Analyse the data using statistical tools.
- v. Identification of "who is the major contributor?"

## III. RESEARCH METHODOLOGY

The method used for this study are combination of literature review, questionnaire survey, and interview in order to obtain the necessary informations about the stalling of construction projects.

### A. literature study

The literature study was carried out to obtain the information about the risk factors contribute to the stalling of construction projects all over the world. The literature study includes 15 journal review and 25 net case studies on

abandoned and stalled construction projects. With the help of literature study, 50 risk factors which contribute to the stalling of construction project were identified and listed.

**B. Questionnaire**

For this study, the questionnaire survey was used to investigate and identify the critical factors of project abandonment in India. Based on the results obtained from the literature study, each factor that has led to the problems of causing construction project abandonment was analyzed accordingly. A questionnaire survey was prepared and distributed among the selected respondents. (Architects, contractors, consultants, builders, developers and project managers)

- **Preparation and distribution of questionnaire form**

A questionnaire form (google form) was prepared with the help of risk factors identified from the literature study. The questionnaire survey form was divided into three sections, Sections A B and C. Section A focuses on the respondent’s background, Section B focuses on identifying the critical factors of stalled projects and Section C focuses on identifying the major contributor of the stalling of construction project. All the information obtained from the respondents was kept confidential. The respondents were required select the scale given for the probability of risks. Number 1 represents very low probability, number 2 represents low probability, number 3 represents moderate probability, number 4 represents high probability, and number 5 represents very high probability.

- **Telephonic interview**

In addition to the questionnaire survey, the telephonic interview session was held in order to meet the objectives of the study and gather more necessary information about the problems associated with the stalling of construction project. The interview was carried out with targeted respondents. During the interview session, the respondents were asked few questions and encouraged to give their own perception and opinion.

**C. Process of data analysis**

The statistical data analysis was done using SPSS statistics 22 and EXCEL to determine critical factors and ranking them. Different type of analysis is done using the collected data. They are reliability test, to identify the consistency of the questionnaire survey, relative Importance

Index (RII) and Quantitative statistical analysis to rank the severity of the causes.

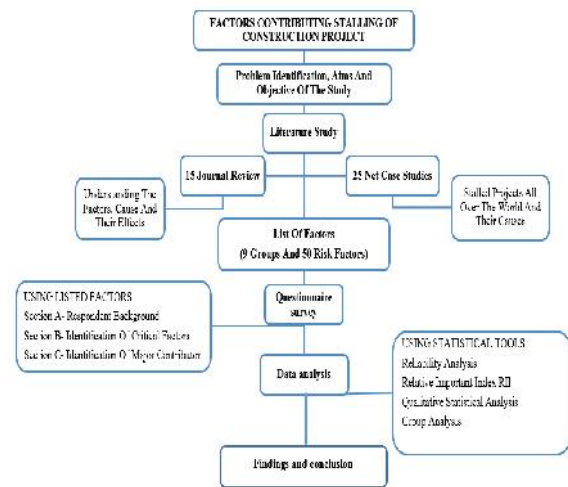


Fig. 1: Methodology.

**IV. DATA ANALYSIS**

**1) Respondent background analysis**

The details of the respondents involved in the questionnaire survey (Section A) are provided an information about the gender of respondents, level of education, designation and working experience of respondents. The total number of respondents is 73, of which 21 respondents are architects, 10 respondents are builders and developers, 13 respondents are contractors, 19 respondents are consultants, and 10 respondents are project manager and construction manager. The results show that 67% of respondents are male and have a degree and majority of them aged between 30 and 49 years and have working experience in industry for at least 10 years.

**2) Analysis of the risk factors**

After the data collection from seventy three respondents the data was analyzed to determine the severity of each factor affecting construction project.

**I. RELIABILITY ANALYSIS**

Cronbach’s alpha is used here to measure the reliability of the questionnaire between each field. Cronbach’s coefficient alpha is designed as a measure of internal consistency. The Reliability Analysis results are listed in the Table.1

Table.1: Reliability analysis of factors causing delay.

| S. NO          | MAIN GROUP                                   | CRONBACH'S ALPHA VALUE |
|----------------|--|------------------------|
| 01.            | Project manager or project management causes | 0.841                  |
| 02.            | Contractor's causes                          | 0.784                  |
| 03.            | Consultant's causes                          | 0.823                  |
| 04.            | Client's causes                              | 0.638                  |
| 05.            | Financial causes                             | 0.820                  |
| 06.            | Government regulation and politics causes    | 0.829                  |
| 07.            | Physical and environmental causes            | 0.694                  |
| 08.            | Procurement causes                           | 0.612                  |
| 09.            | Other causes                                 | 0.705                  |
| <b>Overall</b> |  | <b>0.937</b>           |

The overall Cronbach's alpha value is found to be 0.937 hence the data considered in the questionnaire is valid.

**II. RISK FACTOR ANALYSIS**

Failed to deliver project within cost and time constraints, ineffective in scheduling, planning, executing and monitoring and improper resource allocation and utilization are the factors in group 1 were identified as top risks. In group 2, low profit margin due to competition, financial difficulties faced by the contractor and change orders were identified as top 3 risks. In group 3, design errors by the consultant is ranked high among all the other factors. In group 4, client not providing adequate finance and client's experience were identified as the top risks. In group 5, delay in payments, inflation / fluctuation are ranked high among all other factors. In group 6, corruption of political parties and government officials, absence of laws and regulations to prevent stalling and ineffectiveness of law implementation or enforcement mechanism were identified as top three risks. In group 7, natural disaster was a top ranked risk factor. In group 8, unskilled site workers or shortage of labors and ineffective procurement process are considered as high risk factors and in group 9, fraudulent practices, briberies and major accidents were identified as major risk factors.

**III. QUALITATIVE STATISTICAL ANALYSIS**

Totally 8 critical factors were identified using qualitative statistical analysis of SPSS Statistics 22. The analysis shows, cost and time plays major role in construction project stalling and abandonment. All the factors listed below was directly or indirectly related with cost of a project.

Table.2: Mean value of 8 critical factors.

| S. NO | GROUP | FACTOR  | MEAN |
|-------|-------|---|------|
| 01.   | G1.PM | Failed to deliver project within cost and time constraints    | 4.23 |
| 02.   | G1.PM | Ineffective in scheduling, planning, executing and monitoring | 4.21 |
| 03.   | G5.FP | Delay in payments   | 4.21 |
| 04.   | G2.C1 | Low profit margin due to competition                          | 4.17 |
| 05.   | G1.PM | Improper resource allocation and utilization                  | 4.13 |
| 06.   | G9.OF | Fraudulent practices and briberies                            | 4.11 |
| 07.   | G3.C3 | Client not providing adequate finance                         | 4.08 |
| 08.   | G2.C1 | Financial difficulties faced by the contractor.               | 4.01 |

**IV. GROUP ANALYSIS**

In group analysis, all 9 groups were analyzed using their mean value and ranked them accordingly. The results shows, financial problems, ranks first contribute high among all other groups. It again satisfies the previous analysis (Qualitative Statistical Analysis) of critical factors. The next group contribute more to the stalling is contractor group, followed by project management group and government regulation and politics. The least level contributing group is physical and environmental factor's group.

Table.3: Mean value and ranking of groups.

| S.NO  | GROUPS  | MEAN | RANK |
|-------|---|------|------|
| G5.FP | stalling due to financial problems                    | 3.82 | 1    |
| G2.C1 | stalling due to contractors                           | 3.70 | 2    |
| G1.PM | stalling due to project management or project manager | 3.59 | 3    |
| G6.GP | stalling due to government regulations and politics   | 3.58 | 4    |
| G4.C3 | stalling due to clients                               | 3.37 | 5    |
| G9.OF | stalling due to other factors                         | 3.21 | 6    |
| G8.PF | stalling due to procurement factors                   | 3.21 | 7    |
| G3.C2 | stalling due to consultants                           | 2.79 | 8    |
| G7.PE | stalling due to physical and environmental factors    | 2.72 | 9    |

**V. IDENTIFICATION OF THE CONTRIBUTOR**

The respondent was asked to rate the roles that play vital role in the construction sector according to their level of contribution. It was identified that contactors, developer or builder, cost consultant and financial institution are the top level contributors of construction project stalling and abandonment. While client, project manager and government are medium level contributors. Structural consultants and architects are low level contributors and MEP consultants and surveyors are least contributors of construction project stalling and abandonment.

Table.4: RII value and ranking of the contributors

| FACTORS                | RII  | RANK |
|------------------------|------|------|
| Contractors            | 0.78 | 1    |
| Developers or Builders | 0.76 | 2    |
| Cost consultants       | 0.73 | 3    |
| Financial institutions | 0.71 | 4    |
| Client                 | 0.65 | 5    |
| Project manager        | 0.63 | 6    |
| Government             | 0.62 | 7    |
| Structural consultants | 0.58 | 8    |
| Architects             | 0.54 | 9    |
| MEP consultants        | 0.38 | 10   |
| Surveyors              | 0.34 | 11   |

**VI. FINDINGS AND CONCLUSION**

All the 50 risk factors were analysed using Relative Importance Index RII and 8 critical factors were identified using Qualitative Statistical Analysis. From the Table 2,

- i. According to the respondents, failed to deliver project within cost and time constraints are the most important factor that cause stalling because the project manager and the organization may face a lot of obstacles to achieve the scope of the project that directly affects the cost and time.
- ii. Ineffective in scheduling, planning, executing and monitoring was ranked second highest among the project manager and management related factors because these phases of the project management lifecycle consists of completing and managing the work required to meet the project objectives.
- iii. Delay in payments have a negative impact on stakeholder and labor productivity and continuous delay in payments will lead to halting.
- iv. Low profit margin due to competition is the top of all factors related to contractor. Some of the respondent

have admitted that their project got stalled due to low profit margin and later completed with their own money, in small and medium scale projects.

- v. Improper resource allocation and utilization arises mainly because of scarcity of resources.
- vi. Fraudulent practices and briberies is a common factor, which is mentioned by most of the respondents. The scale and complexity of many construction project along with the stakeholder participating, the geographic locations where they are performed and the legal systems to which they are exposed can make them especially prone to bribery and corruption.
- vii. Client not providing adequate finance was contribute the most for client related cause. A project cannot proceed without adequate financing. Slow client payments can create financing problems for the construction companies who is in charge of the project. Most construction companies receive periodic payments from the owner/ client. Unfortunately, this often leads to contractors having a negative cash balance due to delays in payment. Permanent delays from the owner can result in financial burden and cash flow problems to the contracted construction company which obviously leads to the construction stalling.
- viii. It is majorly accepted by all kind of respondents that financial difficulties faced by the contractor will play major role in small and medium scale construction project stalling.

All the 9 groups were analyzed in a group analysis using its mean values. It shows financial problems, contractor and project management group contribute stalling or abandonment high among all.

The study also identified that contactors, developer or builder, cost consultant and financial institution are the top level contributors of construction project stalling and abandonment.

This study recommends all parties involved in a construction project to preplan their activities according to the critical factors before the commencement of the project to prevent the problem which may arise in future to deliver a successful project.

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