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Critical Causes of Failure in Contracts in Indian Construction Projects

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Abstract:- This research discusses the main causes of contractor's failure in Indian construction industry. The objective of this research has been achieved by means of questionnaire survey and statistical analysis of the data collected. The opinions of contractors regarding the severity of each cause are to be checked by Analysis of Variance Post hoc test. Case study has been conducted for projects to validate the severity of critical factors so identified according to the actual performance.

Keywords:- *contractor's failure, critical factors, statistical analysis, analysis of variance.*

I. INTRODUCTION

The construction business is large in size and significant in the role it plays in the economy of the nation but through recent years it has witnessed an increasing number of construction financial failures. The failure of a company may cause extensive losses to the business community and also to society. In particular, it may affect various stakeholders, such as investors, creditors, shareholders or employees.

Construction is always an extremely competitive business. That fact is not limited to territory or project type. With limited local opportunities available to some contractors, expanding beyond their territory or normal scope of work becomes attractive, but that injects additional risks. There are large numbers of contractor's it's easy to establish a new firm. The construction industry attracts many people because of their belief of high profit, but when they enter the business, they will feel the difficulty and complexity of it. A number of studies have been conducted to address and control the industry's problems in the developing countries. However, lack of progress was noted in solving such problems due to many reasons. The aim of this paper is to explore the causes of contractor's business failure and to investigate the impact level of these causes from the contractor viewpoint.

II. LITERATURE REVIEW

A number of researchers had studied the causes of contracting business failure.

According to Adnan Enshassi et al (2011) the main causes of business failure are delay in collecting debt from clients (donors), border closure, heavy dependence on bank loans and payment of high interest on these loans, lack of capital, absence of industry regulations, low profit margin due to high competition, awarding contracts by client to the lowest bidder, and lack of experience in contract management.

Ibrahim Mahamid et al (2011) say that there are three main factors namely financial, managerial, and external. The identified factors are ranked according to their importance as assessed by the respondents. The findings reveal that the top five affecting factors are: fluctuation in construction material cost, delay in collecting dibs from clients, lack of experience in contracts, low margin of profit due to competition.

Kivrak et al (2008) examined the critical factors causing the failure of construction companies through a survey conducted among 40 small to medium-sized Turkish construction companies. A lack of business experience and country's economic conditions were found to be the most influential factors to company failure.

Horta et al (2013) proposed a new model to predict company failure in the construction industry. The model includes three major innovative aspects. The use of strategic variables reflecting the key specificities of construction companies, which are critical to explain company failure.

Hamimah Adnan et al (Dec 2011) says that the most common unethical conduct evidenced by the contractors are cover pricing, bid cutting, poor documentation, late and short payments, subcontractors' lack of safety ethics, unfair treatment of contractors in tender/final account negotiations, competitors' overstatement of capacity and qualifications to secure work, competitors' falsification of experience and qualifications and bureaucratic, government policy.

Jacob Phaladi et al (2009) revealed that the problems faced by small contractors are as follows; Government not paying on time, lack of capital and difficulty in arranging guarantees, lack of technical skills, and lack of business management skills. The importance of small contractors in South Africa has been recognized by many researchers and policy makers.

Azlan Shah Ali et al (2010) says that the delay in construction projects is a situation where the project cannot be completed under the planned time. It is a common issue faced in the construction industry all over the world especially in developing countries. The data collected was analyzed using SPSS software. Seven factors that contribute to delay were identified through literature review, namely contractors‟ financial difficulties, construction mistakes and defective work, labor shortage, coordination problems, shortage of tools and equipment, material shortage and poor site management. The three most important factors were found to be labor shortage, contractors‟ financial difficulties and construction mistakes and defective works.

III. OBJECTIVES OF THE STUDY

The main objective of the study is to assess the causes for the contractor's failures in the Indian construction industry and to suggest suitable recommendations to the contractor to overcome their failure.

IV. METHODOLOGY

This research discusses the main causes of contractor's failure in Indian construction industry. The objective of this research has been achieved by means of questionnaire survey. The questionnaire was divided into two main areas: the first area contains the general information about the organization and the details of the respondents and the second area contains was the factors that causes contractors failure.

The survey included 35 factors, collected through various literature review and they were listed below 3 main groups namely administration, financial, and execution. Five point Lickert's scale was used in the questionnaire 1 representing very low impact, 2 representing low impact, 3 representing moderate impact, 4 representing high impact and 5 representing very high impact. The questionnaire included fifty nine questions distributed to ninety construction companies.

The statistical analysis was done using SPSS 15 to determine critical factors of a company failure. Reliability test has been done to identify the consistency of the questionnaire survey. Quantitative statistical analysis for questionnaire was done to rank the severity of causes of contractor's failure in Indian construction industry. The opinions of contractors regarding the severity of each cause are to be checked by Analysis of Variance in the Post hoc test. Case study has been conducted for projects to validate the severity of critical factors so identified according to the actual performance.

V. ANALYSIS AND DISCUSSION

After the data collection from seventy three respondents the data was analyzed to determine the severity of each factor affecting contractor's failure.

A. Reliability Analysis

Cronbach's alpha is used here to measure the reliability of the questionnaire between each field. Cronbach's coefficient alpha (George and Mallery, 2003) is designed as a measure of internal consistency. The normal range of Cronbach's coefficient alpha value is between 0.0 and + 1.0. The Reliability Analysis indicated that the overall Cronbach's alpha value is 0.911 and hence the data considered in the questionnaire is valid.

B. Quantitative statistical analysis

Quantitative statistical analysis was carried out to find the mean of each factor. The mean values above THREE are taken as important factors because the value 4 and 5 in Lickert's scale was assigned to be of high impact and very high impact respectively. So the mean values less or equal to 3 are ignored. The TWELVE factors so identified as important are given in Table 1.

Sl. No.	Factor No	Factors	Mean
1.	A5	Poor monitoring and control	3.54
2.	A10	Delayed submissions of claims	3.52
3.	A9	Assigning incompetent project leader at the site	3.49
4.	E4	Award of contract to lowest or incompetent bidder	3.45
5.	E5	Change in the type of work	3.42
6.	F10	Delay in payment of claims	3.42
7.	F8	Poor estimation practices leading to underestimation of profit	3.42
8.	A4	Lack of using project management techniques	3.36
9.	F2	No Cash flow management system	3.36
10.	E6	Frequent Rework due to variations or changes in specifications	3.28
11.	A3	Lack of Labor productivity and improvement	3.13
12.	F7	Poor tendering/selection procedure	3.13

Table 1. Descriptive Statistical Analysis

This result was supported by the results of Arditi et al (2000) in their study that the organizational, financial, environmental, expansion factors represents 17.14%, 56.82, 20.01%, 0.15% of construction business failure respectively.

C. Analysis of variance

The perceptions of the project participants regarding the extent of severity of each of these TWELVE Factors in affecting the successful performance of the construction projects is to be analyzed by conducting One Way Analysis of Variance. The one way ANOVA analysis was carried based on different background information's respondents which is The Role of the Project Participants, The number of Projects they have handled during their career and the experience they have in the construction field.

- *Respondents*

One way ANOVA Post hoc test was done between the groups of the respondents based on their Role in the Construction. Only two factors were identified with less than 5% significance is shown in Table 2.

Factor no	Factors	Sig
E6	Frequent Rework due to variations or changes in specifications	0.04
A9	Assigning incompetent project leader at site	0.00

Table 2. Role of Project Participants

Out of these two factors, the Contractors attached more importance to only one factor namely, Frequent Rework due to variations or changes in specifications. Project manager views are different for the factor Lack of Labor productivity and improvement.

- *Number of Projects Handled*

The results of the ANOVA for the number of projects handled are shown in Table 3. Twelve factors were identified with less than 5% significance.

Factor No	Factors	Sig
A3	Lack of Labor productivity and improvement	.001
A4	Lack of using project management techniques	.011
A10	Delayed submissions of claims	.002
A9	Assigning incompetent project leader at site	.000
A7	Not adhering to or completing on schedule	.011
F2	No Cash flow management system	.011
F7	Poor tendering/selection procedure	.001
F8	Poor estimation practices leading to underestimation of profit	.002
F9	Lack of Book Keeping System	.000
F10	Delay in payment of Claims	.011
E4	Award of contract to lowest or incompetent bidder	.011
E5	Change in the type of work	.015

Table 3. Number of Projects Handled

The factors viewed differently by the respondents with less than 30 projects in 5 years are Lack of using project management techniques, Lack of Labor productivity and improvement, Delayed submissions of claims, Assigning incompetent project leader at site, Not adhering to or completing on schedule.

The factors viewed differently by the respondents with less than 20 projects in 5 years are No Cash flow management system, Poor estimation practices leading to underestimation of profit, Frequent Rework due to variations or changes in specifications, Delay in payment of Claims, Award of contract to lowest or incompetent bidder.

The factors viewed differently by the respondents with less than 10 projects in 5 years are Poor tendering/selection procedure, and Change in the type of work.

- *Total Experience*

The results of the ANOVA for total experience in construction field are shown in the Table 4. Five factors were identified with less than 5 % significance.

Factor no	Factors	Sig
A4	Lack of using project management techniques	0.026
F8	Poor estimation practices leading to underestimation of profit	0.035
A9	Assigning incompetent project leader at site	0.031
E6	Frequent Rework due to variations or changes in specifications	0.029
E4	Award of contract to lowest or incompetent bidder	0.020

Table 4. Total Experience

The factors viewed differently by the respondents have greater than 10 years of experience are Lack of using project management techniques, Poor estimation practices leading to underestimation of profit and Frequent Rework due to variations or changes in specifications.

The factors viewed differently by the respondents have less than 10 years of experience are Assigning incompetent project leader at site and Award of contract to lowest or incompetent bidder.

VI. CONCLUSIONS AND RECOMMENDATIONS

The results of analyzing thirty five causes of failure showed that main causes of contractor's failure are, Poor monitoring and control, Delayed submissions of claims, Assigning incompetent project leader at the site, Award of contract to lowest or incompetent bidder, Change in the type of work, Delay in payment of claims, Poor estimation practices leading to underestimation of profit, Lack of using project management techniques, No Cash flow management system, Frequent Rework due to variations or changes in specifications, Lack of Labor productivity and improvement, Poor tendering/selection procedure.

Case study has been conducted for two different projects to identify the severity of these important factors according to their experience.

The results of the case study recommends the contractors to react according to the political and environmental changes, assign the proficient project leader at site to avoid delay, wastages and rework, award contract to the capable sub contractors, improve the practice of calculating the project cost, to establish a system for motivating labors and to take the contract at reasonable cost.

This study also recommends the contractor's to preplan the activities according to the critical factors before the commencement of the project and to become a successful contractor in the industry. This study has to be updated for every five years to identify the recent causes of contractor's failure in Indian Construction Industry.

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