Are Disputes in Construction Industry is Really Making a Noteworthy Measure? - A Survey in Surat City

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Abstract

The construction industry in India averages 2000 billion rupees from 2011 until 2018, reaching an all-time high of 2400 billion rupees in the first quarter of 2018 on the GDP chart. The construction industry in India is feeble and suffering through failure of resolution of disputes expeditiously and effectively by the parties.Our aim is to analyse the main causes of disputes which occur in construction industry in surat city. Disputes have become an endemic feature of the Indian construction industry. If they are not resolved promptly they can escalate causing schedule delays, lead to claims that require litigation proceedings for resolution and destroy business relationships. In this research, the causes of disputes were classified in 7 broad categories depending on their nature and mode of occurrence. All these categories comprises of 31 factors that have been used for research. The research focuses on questionnaire survey for the data collection. In this research total 100 quessionaire were surveyed in Surat construction industry. The questionnaire was prepared in the form of importance index and severity index. The research concludes, the top factors which causes dispute in surat construction industry are variations initiated by owner, design errors, change in government policy, quality related dispute and delays in work progress.

Keyword- Causes of Dispute, Questionnaire Survey, RII, SI

I. INTRODUCTION

Dispute means difference or disagreement of strife over some issues between the parties. Dispute occur by different reasons like delay of construction work, lack of quality control, increase in the construction cost during project work or miscalculation of cost, errors in design and specifications etc. The construction industry is a complex environment in which participants with different professions, different views, talents and levels of knowledge are work together for their own benefits, so there are many chances to generate conflicts between two parties. If conflicts are not well managed, they quickly turn into disputes. Disputes are one of the main factors which decrease the project success rate. Thus, it is important to know causes of disputes in order to complete the construction project in the desired time, budget and quality (Emre cakmak, Pinar Irlayici Cakmak, 2013).

The total amount of investment that is currently tied up in disputes is approximately INR 75,000 crores. The major issue is pendency of construction disputes, which is about 68% of the total claims against government entities and public-sector units that are pending in arbitration and 13% are pending with the government entities.

A. Aim

- To study and analyses the top causes of dispute which occur in the construction industry and to resolve the dispute to improve the project success rate.

B. Objectives

- To evaluate the cause of dispute in construction industry.
- To analyze top factor of dispute management in according to Surat city construction.

C. Scope

The research is carried out with the questionnaire survey in Surat City from Gujarat State.The causes of disputes and criteria were taken from the research paper / Research article studied under Literature review (Cakmak and Cakmak, 2013) and from review of field experts.The importance index and severity index method is used for the data collection in questionnaire survey.

II. APPROACH TO DISPUTE MANAGEMENT

Schmidt (1974) conducts a study on group of executives and came out with the following positive and negative outcomes of conflict.

Positive outcomes of conflict are: Better ideas are produced, people were forced to search for new approvals, long standing problems surfaced were dealt with, people were forced to clarify their view, the tension stimulated interest and creativity, and that people had a chance to test their capacities.

Negative outcomes of conflict include: Some people felt defeated, distance between people increased, a climate of suspicion and distrust developed, people and departments that needed to corporate looked after only their own narrow interests, persistence active or passive developed were team work was needed, and that some people left because of the turmoil.

The construction sector remains one of the least digitalized industries, but as the world enters a welcome phase of buoyant economic performance, digitalization presents an opportunity to help improve productivity levels in the industry.

Region	*Avg. Dispute value (US$ Millions)*				*Avg. length of dispute (Month)*			
	2014	*2015*	*2016*	*2017*	*2014*	*2015*	*2016*	*2017*
North America	*29.6*	*25*	*21*	*19*	*16.2*	*13.5*	*15.6*	*17.7*
UK	*27*	*25*	*34*	*34*	*10*	*10.7*	*12*	*10*
Continental Europe	*38.3*	*25*	*19*	*29.5*	*18*	*18.5*	*14.1*	*18.1*
Middle East	*76.7*	*82*	*56*	*91*	*15.1*	*15.2*	*13.7*	*13.5*
Global Average	*42.9*	*39.3*	*32.5*	*43.4*	*14.8*	*14.5*	*13.9*	*14.8*

Table 1: Effect of Dispute in terms of valuations and delay in construction

III. RESEARCH METHODOLOGY

Total 31 factors which causes dispute are divided in 7 main categories: owner related, contractor related, contract related, design related, project related, human behavior related, external factors (see table 2). The respondents were requested to choose one degree of importance for each dispute cause which is extremely important, important, netural, somewhat important, not at all important. Also they were requested to choose one degree of severity which is extreme, great, moderate, little, none.

A. Relative Importance Index (RII)

Relative index analysis was selected in this study to rank the criteria according to their relative importance. The following formula is used to determine the relative index (Olomolaiye et al., 1987; Chinyio et al., 1998; Chan and Kumaraswamy, 1997; Adetunji, 2005; Braimah and Ndekugri, 2009):

$$\text{RII} = \frac{5n5 + 4n4 + 3n3 + 2n2 + 1n1}{A * N} \qquad (1)$$

Where;
n5 = the number of respondents who answered “Extremely Important”
n4 = the number of respondents who answered “Important”
n3 = the number of respondents who answered “Neutral”
n2 = the number of respondents who answered “Somewhat Important”
n1 = the number of respondents who answered “Not at all Important”
A is the highest weight (i.e. 5 in our case) and N is the total number of the respondents.

B. Severity Index (SI)

The following formula is used for severity index (Assaf SA, Al-Hejji S, 2006).

$$\text{Severity Index} = \frac{\sum_{i=1}^{i=5} xi * ai}{5 \sum_{i=1}^{i=5} x_i} \qquad (2)$$

Where,
ai= value of severity of input data (extreme = 5, great = 4, moderate = 3, little = 2, none = 1)
Xi= frequency of respondents for a particular factor of severity value (numbers of respondents who answered extreme, great, moderate, little and none condition for particular factor).
$\sum xi$ = total number of respondents, In this paper $\sum \text{xi} = 100$ (from sample survey).

IV. SAMPLE SURVEY

$$\text{Sample Size} = \frac{Z^2 \times P \times (1-P)}{C^2} \qquad (3)$$

Where,
Z is value (e.g. 1.96 for confidence level 95% confidence interval)
P = Percentage picking a choice, expressed as decimal (0.50 value is taken in survey)
C = Confidence interval (0.1 value taken in the survey)

Sample size = 96.04 = 96
As per sample survey formula www.surveysystem.com/sscalc.htm, the sample require for the analysis is 96 and for the research analysis in the project the questionnaire surveyed is 100.

V. DATA COLLECTION

A questionnaire sheet was prepared for the purpose of the data collection. These questionnaire is surveyed in Surat city of Gujarat state only since it is the limit area chosen under the research. A total of 150 questionnaire is being circulated among the various stakeholders (owner, contractor, site engineer, project manager, govt. officer and other people – architect, consultant etc) of construction industry to whom causes of dispute selections come into consideration. Out of 150 questionnaire, 100 questionnaire is responded by the respondents.

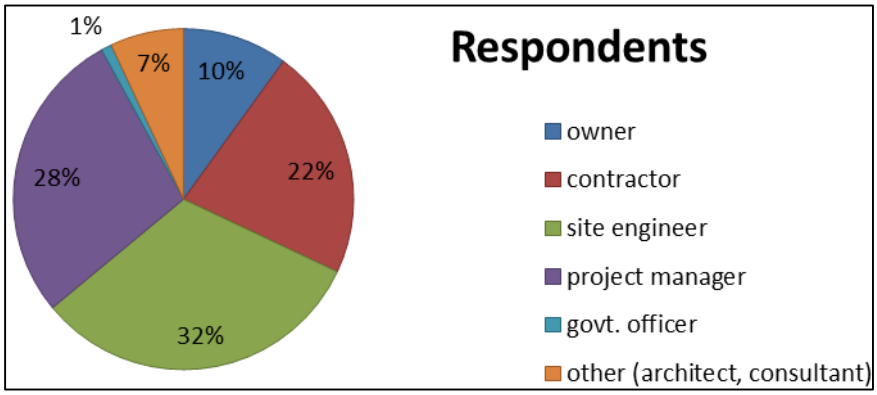

Fig. 1: Percentage of Each Respondent for Data Collection

VI. DATA ANALYSIS BY RII AND SI

Main category of dispute	*Code*	*Factors which cause dispute*	*RII*	*SI*
Owner related	*O1*	*Variation initiated by the owner*	*0.564*	*0.564*
	O2	*Late giving of possession*	*0.510*	*0.526*
	O3	*Payment delays*	*0.572*	*0.540*
	O4	*Change of scope*	*0.484*	*0.482*
	O5	*Quality related dispute*	*0.520*	*0.536*
Contractor related	*C1*	*Technical inadequacy of the contractor*	*0.490*	*0.492*
	C2	*Delays in work progress*	*0.606*	*0.524*
	C3	*Delay due to temporary stoppage*	*0.508*	*0.452*
	C4	*Time extension due to resources shortage*	*0.490*	*0.482*
Design related	*D1*	*Design errors*	*0.490*	*0.550*
	D2	*Incomplete specification*	*0.452*	*0.450*
	D3	*Miscalculation*	*0.442*	*0.490*
	D4	*Feasibility of design*	*0.464*	*0.466*
	D5	*Flow of information*	*0.530*	*0.502*
Contract related	*N1*	*Ambiguities in contract documents*	*0.450*	*0.456*
	N2	*Risk allocation*	*0.472*	*0.476*
	N3	*Different interpretations of the contract provisions*	*0.490*	*0.484*
	N4	*Work done under subcontractor*	*0.496*	*0.472*
	N5	*Variation work outside the scope of work*	*0.518*	*0.500*
	N6	*Change or variation order*	*0.512*	*0.490*
Human behavior related	*H1*	*Lack of communication*	*0.534*	*0.444*
	H2	*Lack of team spirit*	*0.462*	*0.460*
Project related	*P1*	*Unforseen Changes*	*0.458*	*0.490*
	P2	*Site condition*	*0.488*	*0.524*
	P3	*Property damages*	*0.432*	*0.482*
	P4	*Information and administrative related dispute*	*0.464*	*0.476*
	P5	*Quality degrade before maintenance period*	*0.486*	*0.522*
External factors	*E1*	*Government funding process*	*0.430*	*0.454*
	E2	*change in rate of item at work due to change in specification*	*0.522*	*0.526*
	E3	*Weather*	*0.534*	*0.524*
	E4	*Change in government policy*	*0.496*	*0.522*

Table 2: Data analysis by RII and SI

VII. CONCLUSION

- The top factors which causes dispute from RII Analysis are delays in work progress (0.606), payment delays (0.572), variation initiated by owner (0.564), lack of communication (0.534) and from SI Analysis are variation initiated by the owner (0.564), design errors (0.550), payment delays (0.540) and quality related dispute (0.536).
- The most affected factor which may affect the project cost or duration or both are variation initiated by owner, design errors, payment delays and quality related disputes
- However, the analysis value hasn't approached the higher value concluding that dispute issues are not so highly affected and considered in Surat construction industry.

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