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Factors Affecting Crisis Management in Construction Project

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Abstract - *A Sudden and an unexpected event that threatens to disrupt an organization's and can also poses financial and reputational threat called as Crisis. Due to modern development construction projects involves complex interfaces, various technologies and integration of materials and equipment which in turn create uncertainties and associated risks. It is the need of today's construction sector participants such as engineers, managers and owners to implement crisis management for effective resolving of such crisis situations and to prevent their future occurrences. In this paper by using SPSS software tool the various factors governing to the crisis are studied.*

Key Words*: *Construction, Crisis, Crisis Management, Uncertainties, Treat.

1. INTRODUCTION

Any organization that can estimate a crisis well through crisis management strategies can sustain any uncertainties with least possible negative outcomes. Therefore it is essential for the construction companies to deal with crisis through effective crisis management process.

During a crisis situation, an organization seems to be losing its potential for performing complex situation with regular practices. Crisis management is a process in which continuous steps are taken to overcome any crisis situation through early signals and eliminating the same with no or least damages. Construction projects are more prone to crisis situations due to the various complexities involved during the event of construction.

As for all other organizations, effective crisis management is equally important for property developers. Subject to external market forces and uncertainties, developers may suffer costly errors if they are caught unprepared when a crisis strikes

2. LITERATURE REVIEW

Crisis that can affect construction companies occur periodically or suddenly. Such a companies in the pursuit of an innovative crisis management approach should be ready against any types of crises. Because of the fact that construction companies should deal with high investment costs, crises can adversely and significantly influence these companies. Survival of them with a minimal loss depends greatly on establishing an early warning system, struggling with the crisis effectively, and turning pre-crisis conditions in a short period of time. [1]

Construction companies that can overcome a crisis with a minimum loss should turn to pre-crisis conditions in terms of restricted expenditures, centralized management, and low-level managers' suspended authorities. They should also record information obtained and lessons learned by crises and note mistakes done in the crisis process. In addition, high-performance personnel may be rewarded while low-performance ones may be fired. Finally, permanent commercial relationships with suppliers and customers should be reviewed for an innovative crisis management process. [1]

The three ironies of construction crisis management are: at a time where at aa time when mutual sensitivity between project members is important it is less likely; at a time when effective communication is important it is less likely; at a time when collective responsibility and teamwork is important it is less likely.[2]

Effective crisis management demands that project managers develop a sense of collective responsibility, mutual sensitivity and responsiveness. The behavior of the people involved must be positive and also the y have to work towards common goal not to self –centered profitable goal. [3]

According to project the nature and management of crisis differ. The responsibility to act against crisis in company is either on project manager or crisis management team. [4]

Patterns of communication and behavior emerge within a construction project in response to a construction crisis. A grounded theory is presented in four parts. The first part conceives a construction crisis as period of social instability. The second part construction crisis results from period of behavioral instability and conflict which is self-perpetuating. The third part cities social structure as an important influence upon construction crisis management efficiency. The fourth part points to the in-

built deference mechanism which construction crisis have and to three managerial ironies. [5, 6]

In high-risk industries, companies with well-conceived crisis management plan are at commercial advantage. The companies should conduct studies about the crisis causes and must be prepared for crisis. [7]

3. RESEARCH METHODOLOGY

3.1 Objective

The main objective of this study is to identify the major factors that govern the implementation of crisis management in construction projects. Also the various remedies can be applied to crisis and also how the construction firms resist to crisis.

3.2 Scope

The scope of this study is confined to owners, engineering and managerial personnel involved in construction projects in India.

3.3 Data Collection

The data are collected among owners, engineering and managerial personnel involved in different construction projects through questionnaire survey. The questionnaire was prepared with two parts namely demographic profile of the respondents followed by thirty statements related to the factors governing crisis management implementation in construction projects. The respondents are provided with five point scale rating system to share their views regarding crisis management implementation in construction projects.

3.4 Descriptive Statistics

The questionnaire survey was successfully carried out with numerus valid responses from various owners, engineering and managerial personnel involved in construction projects carried out in west Maharashtra of India.

3.5 Factors Considered for study

The following factors identified through literature findings and real-time observations are considered for the proposed study on factors governing crisis management implementation in construction projects.

- Supplier relationship
- Material costs
- Government norms
- Financial aspects
- Manpower availability
- Crisis prediction
- Information system
- Design changes
- Change or appointment of managerial personnel
- Contingency plan
- Control over possible human errors
- Feedback on field operation
- Satisfactory employee performance
- Cultural differences
- Psychological counselling
- Scheduling variances
- Hostile client approach
- Learning from past
- Contractors performance
- Safety issues
- Environmental factors

4. RESULT AND DISCUSSIONS

4.1 General

The data analysis will be carried out using SPSS (Statistical Package for Social Sciences), a statistical software tool for data analysis.

4.2 Principal component analysis

Principal component analysis (PCA) is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components. The number of principal components is less than or equal to the number of original variables.

Prior to the analysis, sampling adequacy is checked using Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The sampling adequacy showed an acceptable value of 0.544.

Initially 25 factors were used, after reducing these items by eliminating those which have insufficient loadings, we have 7 major factors. The identified major factors are given as follows.

- Supplier relationship
- Crisis Prediction
- Design Changes
- Manpower availability
- Time contingency.

- Political Interference
- Management Strategies

4.3 Principal component analysis result:

Table -1: Principal Component Analysis

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
Supplier Relationship	2.065	29.500	29.500
Crisis Prediction	1.339	19.132	48.632
Design changes	1.098	15.689	64.321
Manpower Availability	.866	12.365	76.686
Time Contingency	.667	9.522	86.208
Political Interference	.623	8.898	95.106
Management Strategies	.343	4.894	100.000

Table -2: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.544
Bartlett's Test of Sphericity	Approx. Chi-Square	20.497
	Df	21
	Sig.	.490

4.4 Mean score analysis

The frequency distribution method of descriptive statistics is performed for mean score analysis of the identified major factors.

Table -3: Mean Score Analysis

	Mean	Std. Deviation	Analysis N
Supplier Relationship	4.5200	.58595	25
Crisis Prediction	1.8800	.92736	25
Design changes	4.5600	.50662	25
Manpower Availability	4.4000	.57735	25
Time Contigency	4.2800	.73711	25
Political Interference	3.8000	.86603	25
Management strategies	3.8000	.70711	25

4. CONCLUSIONS

Crises are unusual events that threaten basic structures, introduce high uncertainty. Both abrupt and cumulative factors were observed in a project as practice of an international construction firm despite the company's approach to risk management. Crises are a common feature of construction projects because of the long-term nature of projects

As we studied above the principal component analysis will give the major factors that affect crisis management. Due to which the crisis management team or the person who is responsible for its prevention can choose adequate approach for it. Further the results of mean score analysis.

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