

# To Investigate Factors Affecting Contractor Performance for High Rise Building Project

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## ABSTRACT

The construction industry often acts as a catalyst to stimulate the growth of a nation's economy. The industry is often referred to as an engine of growth. However, numerous government reports have criticized the industry's poor performance, especially in terms of productivity, quality and quality systems. In order to improve performance, many construction companies implement integrated system to ensure consistency and better performance of construction projects.

The data collection for study investigates factors affecting contractor performance in high rise building projects was done through a Selected Factors and Sub factors related Questionnaire survey by explorative questionnaire to the respondents involved in daily activities of construction firms in various High rise Projects and different Consultants, Architect and contractors in Nashik City. The questionnaire was designed so that Then ask to people i.e., contractors, architect, consultant, owner, labour and project in charge and given remark or Respondent scores from each as 1 to 5 i.e., Very low IMP to Very high IMP. The analysis of these data was done by a method Mean Item Score.

**Key Words:** Performance, occurrence.

## 1. INTRODUCTION

The construction industry often acts as a catalyst to stimulate the growth of a nation's economy. The industry is often referred to as an engine of growth. However, numerous government reports have criticized the industry's poor performance, especially in terms of productivity, quality and quality systems. In order to improve performance, many construction companies implement integrated system to ensure consistency and better performance of construction projects.

Objectives of that research are 1) To study contractor performance and their best practices for construction projects. 2) To identify the factors affecting performance of contractor in high rise projects. 3) To Evaluation of the above data. And 4) To give suggestions and recommendations for effective performance of contractor in high rise building projects.

Methodology of Research are 1) To Study Research Papers in related to Performance of contractor and their best practices for high rise building. 2) Identify the factors that affected performance of contractor in high rise building projects and some general factors. Prepared Questionnaire survey formats regarding that factors and done site visits and survey. 3) Evaluate above data by Mean Item Score method (In excel for easy and mistakes free calculation). And 4) Based on the above Evaluations and results give suggestions and recommendations for effective performance of contractor in high rise building projects.

## 2. LITRATURE REVIEW

**2.1 Olanipekun Emmanuel Abiodun, et al (2017)**, this study focuses on factors affecting contractors' performance in construction project delivery in Akure, Ondo State with a view to enhancing their performance in construction project delivery. It assesses the success criteria for project performance in the study area; the causes of non-performance of contractors in project delivery in the study area; and evaluates factors for improving contractors' performance in project delivery. A well-structured questionnaire was used to harness information from construction stakeholders. Data was analyzed using mean item score and single factor analysis of variance. The results indicated that the top three criteria for contractors' performance were completion to time, budget and required quality. The results also showed that quality related factors, project management related factors and procurement related factors were factors affecting contractor's performance the most. [1]

**2.2 Yogini K. Patil, et al (2016)**, Cost overruns has been a major issue in many Indian construction projects especially in high-rise building projects. The successful execution of construction projects and keeping them within prescribed schedule and cost is very important for effective cost performance. Author's main aim of the study is to investigate the factors influencing Cost overruns in Indian construction projects. A valid questionnaire for the survey was developed based on factors for cost overruns identified. These factors are grouped into 8 categories for cost overruns and distributed to Contractors, Consultants, and Owners of high-rise construction projects. [2]

**2.3 Mamata Rajgor, et al (2016)**, Delays are unique one in every of the largest issues construction companies are facing today. The research presents the result of the questionnaires survey conducted to identify and evaluate the relative importance of the significant factors contributing to delay in construction project. Construction projects are heavily affected by causes of delay, if anybody doesn't know which factors that causes delay then they cannot be succeeded. The project investigated in that study included residential building, office building projects and high rise building. The project team members i.e. owner, contractor, consultant, Engineers etc. are taken for questionnaire survey to obtain the delay factors and research to identify the main causes and effects of delay in construction projects. [3]

**2.4 Benjamin Boahene Akomah, et al (2016)**, the performance of a contractor is very critical to the success of any building construction project. A comprehensive literature review was carried out to identify performance related problems within the industry. Authors work out on the employed census technique in selecting the contractors. A field survey of 97 Ghanaian contractors was undertaken using structured questionnaires. The extraction of the most critical factors that affect the performance of contractors was undertaken using Relative Importance Index (RII).

The results of the study revealed that: cash flow of project, material and equipment cost, quality of equipment and raw materials, quality training and meeting, and quality assessment system in organizations, are the major factors that affect contractors' performance on building projects. Identified; quality factors and innovation and learning factors as the two key group factors that affect local building contractors' performance. [4]

**2.5 Mihirkumar B. Naik, et al (2015)**, studying by numerous government reports have criticized the industry's poor performance, especially in terms of productivity, quality and quality systems. The preliminary data was collected through a literature review and the use of a questionnaire survey targeted at some contractors, clients and consultants in some projects in India. Few experts were interviewed and their opinions were taken to identify factors which affect contractor performance in construction projects. Author identified total 91 factors that affect contractor performance in a construction project.

The factors for contractor performance are then classified into twelve broad categories depending on their nature and mode of occurrence. By using Relative importance index technique finding critical contractor performance factor and further try to improve performance of their projects. [5]

**2.6 Divya R., et al (2015)**, Delay could be defined as the time over run either beyond completion date specified in a contract or beyond the date that parties agree upon for delivery of a project. It is slipping over its planned schedule and is considered as common problem in construction projects. To identify the major causes of construction delays, its effects, and minimizing delays in construction projects. That study was carried out based on literature reviews and questionnaire survey. [6]

### 3. METHODOLOGY

In this project work, Prepared questions for survey by identifying some factors by studying some research papers on performance of contractor in high rise construction and then choose Projects in Nashik city and their contractors has selected (Total four big construction sites) for Questionnaire survey. Total 41 people are responds to this survey in that most of contractors is common in big projects at Nashik.

#### Procedure of work

Step 1 will be selection of questions and prepared format of Questionnaire survey and Validation formats.

Step 2 Selection of big project or Case Studies in Nashik city and site survey and prepared cumulative sheet of easy calculation and tally in Excel.

Step 3 Calculating Mean item score by using formula in excel for avoiding mistakes.

Step 4 Finding sequences or ranks of each factors or types of factors and sub factors. Then suggest some points to contractor, architect, owners and consultants for improve performance in high rise structure.

The analysis of data collected was done using mean item score. Mean score item was used to indicate the relative position of each factor using equation

$$\text{Mean Score} = \frac{\sum (fx)}{\sum f}$$

Where;

f = Frequency and x = Ranking values

Then after calculating all mean score values by descending order easily find the Ranks of each factors as well as Ranks of main factors or Types of factors. After finding means score sequences are changing of factors and sub factors are different than format and all researchers study. So Prepared table for Final Results are based on mean score was done

## 5.RESULTS

After all calculation of mean score Rank are easily find out by descending order then prepared table 5 for final results or Rank of each main or types of factors and sub factors

**Table 3- Final Ranks by considering Mean score**

Types of Factors	Rank out of 6	Sub Factors	Mean Score	Ranks out of 10
Performance factors Related to Labour	1	Low motivation and morale of labour	3.51	1
		Shortage of skilled labour	3.39	2
		Low productivity of labour	3.37	3
		Shortage labours	3.32	4
		Wrong selection	3.27	5
		Personal conflicts among labour	3.12	6
		Different culture problems	3.12	7
		Incorrect deployment	3.07	8
		Unqualified/ inadequate experienced labour	3.05	9
		Slow mobilization of labour	2.73	10
Performance factors Related to Site and Third party	2	Price fluctuations	3.12	1
		Effects of subsurface conditions (soil, rock, high water table etc.,)	2.95	2
		Accidents during construction & safety aspects	2.95	3
		Changes in government regulations and laws	2.90	4
		Unfavorable weather conditions & natural disasters like floods, earth quakes	2.78	5
		Traffic control and restriction at job site	2.71	6
		Site conditions like inaccessibility remote location, terrain etc.	2.61	7
		Slow site clearance	2.61	8
		Delay in obtaining permits & licenses from authorities	2.54	9
		Problems with other agencies	2.46	10
Performance factors Related to Owner	3	Delay in Progress payments	3.29	1
		Government authorities and approvals	3.02	2
		Deliver the site to the contractor	2.98	3
		Inexperienced project team	2.93	4
		Delays in issue of drawings	2.78	5
		Poor communication and lack of coordination with other parties	2.70	6
		Slowness in decision making	2.61	7
		Change orders by owner during construction	2.49	8
		Irregular attending of weekly meetings	2.46	9
		One sided contract conditions & no fairness in contract administration	2.23	10

Performance factors Related to Contractor	4	Inappropriate construction methods	2.85	1
		Poor communication and coordination	2.80	2
		Poor site management and supervision	2.78	3
		Delay in resource mobilization	2.76	4
		Ineffective project planning and scheduling	2.59	5
		Incompetent project team	2.55	6
		Frequent change of sub-contractors	2.28	7
		Unreliable subcontractor	2.20	8
		Different nationalities of work force on site	2.13	9
		Inadequate contractor experience	2.05	10
Performance factors Related to Equipment and material	5	Late delivery of materials	3.15	1
		Shortage of construction materials	3.07	2
		Escalation of prices in material	2.73	3
		Changes in material types and specifications during construction	2.68	4
		Shortage of equipment	2.46	5
		Slow mobilization of equipment	2.37	6
		Low efficiency of equipment	2.24	7
		Poor procurement strategies of construction material	2.12	8
		Frequent equipment breakdowns	2.10	9
		Equipment allocation problem	1.90	10
Performance factors Related to Consultant	6	Delay in performing inspection and testing	2.54	1
		Inaccurate site investigation	2.46	2
		Conflicts between consultant and design engineer	2.39	3
		Poor quality control	2.39	4
		Late reviewing and approving design documents	2.34	5
		Approving major changes in the scope of work	2.27	6
		Poor communication and coordination with other parties	2.22	7
		Lack of experience of consultant in construction projects	1.90	8
		Inadequate project management	1.90	9
		Incompetence to contractor's technical enquiries	1.87	10

## CONCLUSION

1) Based on the analysis it was found performance factors related to labour are more affect contractors performance. It can be avoided by proper management of labour appointment, there motivation and skilled developed by training sessions monthly or half yearly.

2) Second and third factor are also affecting performance of contractor but it can be avoided by owner and contractor both by communicating each other and proper planning after starting such big projects

3) In this study one main factors are also affected the performance of contractor is delay in progress payment of contractor from owner and also delay payment of labour from contractor but because of scare no anyone give rank against higher authority.

4) Some issued regarding government authority will also affect performance of contractor it also resolve by proper planning ,checking time to time rule related to construction and for communicating or time to time meeting with government authority.

5) The quality and experience of labor supply can have major impact on the projects. Experienced labor may lead to inefficient work and may cause accidents during construction. So give training time to time from skilled labour or officer to unskilled labour. And also take care about safety at time of working.

6) Advance arrangement of equipment's should be made or equipment should purchase on rent for improving performance of contractors against equipment and material related factors.

7) Site management and supervision should be made in a correct manner. Administrative staff should be assigned to make necessary arrangements to complete the project within specified time while satisfying required quality and estimated cost.

8) Finally, to assist contractors improve their performance on construction projects, appropriate planning, good leadership and good communication must be enhanced.

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