# A STUDY ON FACTORS AFFECTING TOTAL QUALITY MANAGEMENT IN CONSTRUCTION PROJECTS

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**ABSTRACT**

The Indian society and economy had suffered human and financial losses as a result of poor quality management in construction industry. The primary purpose of **TQM** is to provide excellence in customer satisfaction through continuous improvement of products and processes by the total involvement and dedication of each individual who is in any way a part of that product/process. The purpose of this study is to focus on the factors affecting total quality management (TQM) in construction projects, since TQM is the key focus for competitiveness. In this study we collected data from site engineers and contractors. Data collection includes the information regarding organizational factors, supplier related factors, employee training factors, equipment factors and process improvement factors. If correctly applied, it will assist a construction company in improving its performance. Further, this paper assesses the factors affecting total quality management in construction projects using Relative Importance Index (RII) as it is a regression-based index which summarizes the magnitude of respondent's status. The results showed that supplier related factors, employee involvement and organizational factors has to be considered as important factors in implementing TQM in construction projects.

**Keywords**: TQM, Organizational factors, resource management factors, employee related training factors, RII.

## I.INTRODUCTION

In India, construction industry is the second largest company when compared agriculture. Throughout the world, the construction area of civil engineering is one of the most hazardous industries. The level of success of construction projects greatly

depends on the quality performance. Poor design and maintenance is major factor that affects the construction. Quality is one of the critical factor in the success of construction project. The concept of construction project development may be impaired without a good knowledge and successful management of the impact of environmental factors influencing the performance of such the project.

TQM focuses on the quality of management system, not the management of quality, on continuous improvement of processes in order to improve every feature of an organization. Quality as the degree of excellence in a competitive sense, such as reliability, serviceability, maintainability or even individual characteristics. Quality system refer to the organizational structure, procedures, processes and resources needed to implement quality management. This study TQM process is considered as a modern system in the field of quantity, after quality assurance, quality control and ISO in the construction sector.

## 1.1 Study on TQM

The study aims to identify and documenting the current status of the quality practices followed in construction industry. To identify the main problems and point out where the scope lies for improving and by what means it is possible to do so. The study commenced with literature review which lead to descriptive study method, questionnaire was floated to construction companies in Tamil Nadu and responses were collected.

The construction industry maintains low quality of standards, low level of communication, low level of inspection and testing and testing low level of training and customer satisfaction. Hence proper care should be taken to improve the above factors by the way of proper maintenance of quality records, periodic meeting regularly and improving lab facilities to test the materials and measure the standards according to Indian standards so that it improves quality of standards, level of communication, inspection and testing customer satisfactions industry. This conclusion is both supported with literature research.

# II. LITERATURE REVIEW

**Dale & Bunney**, (1999), quality inspection is a set of activities which include measuring, examining, testing, gauging one or more characteristics of the products and services and comparing all the results with specified requirements in order to access each characteristic through determining conformity. **Juran (2008),** quality inspection contributes to quality improvement by experienced employees. Measurement, examination can be handled more efficiently due to experienced employee implemented.**Lawrence (1998),** quality control is concerned with operation techniques and activities that are used for checking and reviewing work in order to manage quality. **Juran& Joseph (1998),** there are three quality management processes to improve quality such as quality planning, quality improvement and quality control. In this process, quality should have two aspects; products and services without or with fewer defects which required different processes of quality planning, control and improvement. **Frank & Ronald (2013),** quality assurance requires systematic preventive activities to ensure final products or services due to designing of the business process of production meet customer expectation. **Besterfield (2008),** employee training plays an important role for organizations so as to improve employee skills and their work flow, as well as

accelerating organizational performance that provide quality and customer satisfaction.

**Ramezani&Gharleghi (2013),** employees and management have to work as a team with all departments, integrated together to achieve required outcome of the quality management in order to provide value for organization and high quality outputs. **Forbes et al., (2008)** highlighted that over time and all over countries, the construction industries tends to use only a partial number of risk management techniques even though not all techniques are suitable for every situation. For instance, **Lyons andSkitmore(2004)** found that brainstorming is the most common risk identification techniques used in the construction industry. **Ling, (2004)** asserts that in project planning, project objectives are first defined; therefore, the strategies to achieve them are formulated and presented as project plans and these are used in evaluating the achievement of the objectives. **Faniran et al., (1998)** described project planning as the process of determining appropriate strategies for the achievement of predefined project objectives. They classified project planning into preconstruction and construction planning.

# III.RESEARCH METHODOLOGY

## 3.1 OBJECTIVES OF THE STUDYS

The specific objectives are:

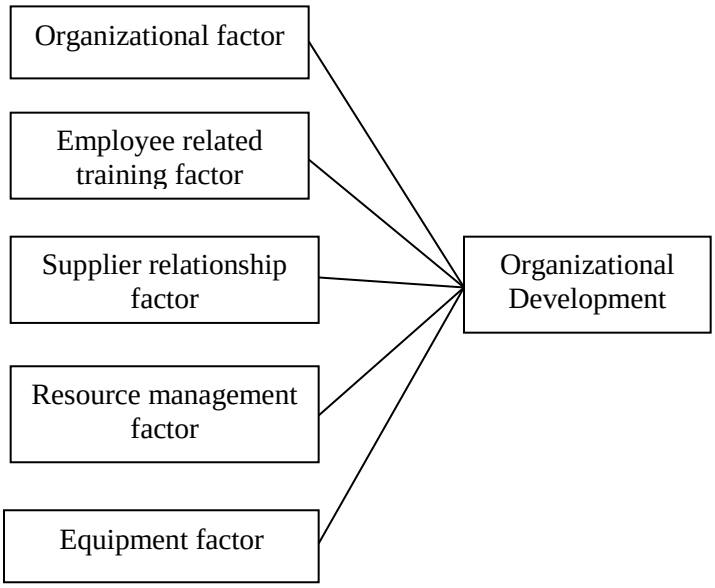
- To understand the importance of quality assurance in the construction industry.
- To identify the effective quality management for the particular project.
- To provide a detailed framework for TQM.
- To investigate the implementation of quality management system in construction projects.
- To improve the quality policy, quality system and quality procedure in construction projects.

## 3.2. SCOPE OF STUDY

This project focuses on the factors affecting total quality management in the construction industry. The main concept of this project is to develop the affected factors in total quality management.

## 3.3. PROJECT RESEARCH MODEL

This study is approached with the following proposed research model




# IV. DATA ANALYSIS

## 4.1. Questionnaire summary

This study compromises professionals in

consulting, contracting engineers, project manager, quality engineers have been involved. Out of 48 questionnaires distributed 36 were returned and those 36 responses have been used for analysis.

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|---|---|
| NO.OF QUESTIONNAIRES DISTRIBUTED | 48 |
| NO.OF QUESTIONNAIRES RECEIVED | 36 |
| RESPONSE RATE | 75% |

## 4.2. RII ANALYSIS

The relative index of inequality (RII) is a regression-based index which summarizes the magnitude of socio-economic status (SES) as a source of inequalities in health. RII is useful because it takes into account the s ize of the population and the relative disadvantage experienced by different groups.

$$\mathbf{RII} = \sum \mathbf{W} / \mathbf{A}^*\mathbf{N}$$

Where,

W - Weightage given to each statement by the respondents ranging from 1 to 5.

A - Highest response integer.

N -Total number of respondents.

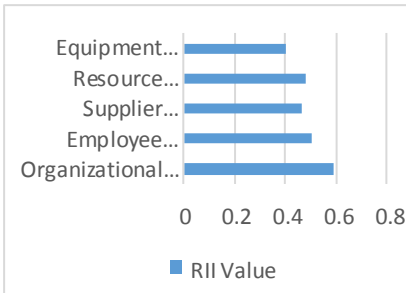


Fig:1 RII Result TQM

The RII results, shows that among the identified factors, the TQM implementation in construction in projects greatly relies on the following factors with highest value organizational factors (0.592), employee related training factors (0.507), resource management factors (0.484).

## CONCLUSION

TQM provides a valuable philosophy for improving productivity in the construction industry. From this study, it is concluded that the TQM is one of the most important approach to achieve quality in construction industry. The study was used to determine the factors of Total Quality Management. Finally, the critical factors of TQM in construction industry had been organizational factors and resource management factors based on the RII value obtained from analysis. In this work the questionnaire was distributed in personal. The number of questionnaires distributed was 48.The 36 responses were collected. This study has identified five important dimensions TQM in….. as customer oriented factors, organizational factors, supplier related factors, employee related training factors, equipment factors, resource management factors. The study concludes that TQM implementation in construction projects greatly relies on the following factors with highest value, organizational factors, employee related training factors, resource management factors.

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