

A Critical Literature Review On Quality Management For Infrastructure Projects

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Abstract: Quality management is most important consideration in any infrastructure construction project. The paper constitutes about the quality management practices of infrastructure construction projects. Indian government declares schemes and policies for growth in quality of construction work. The main aim of this research is to achieve high quality of construction work and give most advantageous quality of infrastructure to society and also encounter the requirements of all the interested parties of the infrastructure projects. Little research work was done and studied for finding applied problems of quality management in a practical and current situation of an infrastructure project. Analysis and conclusions from a questionnaire survey and data analysis were done from the quality audits, problems pertaining to contractor's quality management in projects of the infrastructure.

Keywords: Quality Management, Infrastructure, Project, Quality Audit, High Quality

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I. Introduction

Infrastructure is the basic facilities like roads, schools, phone lines, sewage treatment plants, power generation and industries. The main goal of quality management is to succeed at the necessary level for quality in an infrastructure project which is effectively planned. Quality management is important for maintaining the quality of construction projects at different level so contractors are able to inspect the completed work and check quality of construction. The main focus of the paper is to identify the factors that are affecting quality management from the contractor's perspective in infrastructure projects.

II. LITERATURE REVIEW

David Arditi et al. (1997) stated that there is capacity for improvement of quality in the field of construction and author explained total quality management (TQM). Total quality management (TQM) aims at best team work and co-operation, and not only for the meeting and dispute, it is long life for the construction industry. [4]

Daniel W M Chan et al. (1997) showed the results for determining and evaluating the important factors, which caused delays in Hong Kong construction projects. They observed 83 delay factors, and then they were grouped into eight important classifications. The results showed that the five main principles and factors causing delays are: 'poor site management and needy management', 'unforeseen soil conditions', 'decision-making power was too less which involves every project members', 'diversity in client-initiated' and 'unnecessary changes of tasks'. [5]

Joe C.W.et al. (1999) focused on the factors that create quality management problems for contractors in the infrastructure project. They resolute results with the help of quality inspection reports and interview survey. They also developed an enhanced model for quality management. An analysis was done for 54 audit reports, and around 291 non-conformities were determined. They stated that contractors had to submit his quality related plans and general record. [9]

Peter Hoonakker et al. (2010) discussed the difficulties in construction industry for define quality, determined benefits quality implementation, and at barriers to implementation of quality in construction. They collected data with the help of questionnaire. They showed development which may help to overcome failure. From the finding they stated that contractors do know the value of quality but there are obstacles for implementation. [14]

D. Willar et al. (2010) focused on mainly two function, the first one which represent a review of summarized literature on the basis of past studies on how to implement quality management systems in

construction companies and in construction firms.. Depends on basic questions for objective, appropriate research methods have been studied to fulfill objectives. Mixed methods approach is used for data collection with questionnaire surveys and focus group discussions/interviews for better understand ISO 900. [6]

Tan Chin-Keng et al. (2011) explored what are different practices of quality management, what are commitments in quality field, and what are the obstacles in quality implementation. Tang and am (1999) stated that one of the hardest tasks is to implement ISO 9001. They suggested quality inspection reports and interview survey of a quantitative analysis using statistical tools. In the process of sampling the sampling approach is selected.[16]

Raji Al-Ani et al. (2011) recommended a Quality Management System (QMS) for Construction Site for increase in quality levels in projects, and communication between staff in various Management. The research explained in construction industry there are two main reasons for lesser quality is not usage of building material and second one is poor techniques applied in construction. He stated that there is a misunderstanding to understand quality management. [15]

H. James Harrington et al. (2012) defined the quality and productivity problems, and main aim of this paper is, improvement of quality most is needed to remove waste in the construction industry. Author stated that there is not enough research on better approach for managing quality. [8]

AbukarWarsame et al. (2013)stated quality management is to achieve the high level of quality for an infrastructure project. Main focused on the identification of factors affecting quality management for contractors in infrastructure projects. Procurement methods used in constructing infrastructure transport projects. [1]

Mohamad Kamal et al. (2013) focused implementation of the quality management work process in ship construction industry and for this survey qualitative method was selected as the most appropriate research method among those available. The main purpose was to succeed in the quality management implementation in ship construction project.[11]

Teena Joy et al. (2014) discussed the role of construction industry was the most important role economically and most important to achieving quality in the construction. Quality is a required for sustainability and satisfaction of customer. Quality is defined as ‘meeting the customer prospect, This study is to provide clients, project managers, designers, and contractors with necessary information needed to better manage the quality of a construction building projects by identifying the factors that affect process quality of construction projects and to rank them by the degree of importance. Factors were found by relative index and suggestions were given to increase their quality for companies. [17]

D. Ashokkumar et al. (2014)focused the factors that affect the quality management in the construction. They resolute the results with the help of quality inspection reports and interviews. Field people very well know about the factors affecting the quality majorly. This paper helps, to expose the main factors which affect the construction quality and also useful for minimizing the material wastage, workmanship wastage, time wastage, and indirect. [3]

Mr. Amit A. Mahadik et al. (2014) stated that quality Management is a managerial approach that views and main aims of this paper is broadly at maintaining and improving quality standards and to achieve customer satisfaction. This study investigated the necessity and benefits to the extensive implementation of quality control in the construction industry through a questionnaire survey. [10]

Elvis Attakora-Amaniampong et al. (2014) identified the relationship between total quality management (TQM) and the amounts of internal and external customer attention in project management practices to each of construction firms in Ghana. The study done was both presumed surveys of 50 appellants, which was based on the literature review and investigation was done using questionnaires. [7]

Moza T. Al Nahyan et al. (2014) presented the case study of large infrastructure project on the subject of project management practices and interested parties impact. The investigation of large highway construction was done in the UAE. Information was collected using various methods such as examining documents, interview with main parties, visit to the site and a group discussion. The result focuses on the necessity to enhance coordination, communication and decision making ability and sharing knowledge to all stakeholders. [12]

P.P.Mane et al. (2015)explained the role of quality management fora construction company. Author mentioned that Quality Management System (QMS) can be applied either at the size of organization or at the project size. The paper described about the rating characteristics depends on the importance of a five-point scale. After that in next step the interviews of parties were done related to construction project. [13]

AnupW S. et al. (2015) identified the issues encounter during the execution of Quality Management Systems. A case study which achievement the questionnaire is conducted using content analysis method. They Used Content analysis technique all the inputs, mechanisms, and output were tabulated.[2]

III. Conclusion

Assessment and solutions of the study were done for the execution of quality management in construction projects and several points can be concluded:

- 1) For factors finding project delay in construction. Needy site management and administration, unseen soil conditions, decision-making power is less.
- 2) For affecting cost performance of Indian construction projects. Nine factors were identified inexperience and absence of knowledge; the presence of needy project particular resistant socio-economic and climatic condition, forceful competition during tender stage.
- 3) For Site related factor: Wastes control during material usage, lack of site storage space, operation limitation within site, stealing on site, unforeseen site condition, the existence of unnecessary material.
- 4) For improper material use in construction-related factor: An Improper study on material availability study and its source, inflated specification of an item over specified codes, inadequate preconstruction survey on the material.
- 5) For poor leadership: Inappropriate site supervision and control, inadequate material management, improper construction techniques, inappropriate planning and mistakes during construction, fraudulent activities of subcontractors.
- 6) For Labour and equipment related factors: Obsolete or unsuitable construction equipment, improper handling of materials at the site and engaging inadequate skill on labour.
- 7) For miscommunication among project members regarding quality factor: lack of strong management, lack of communication, miscommunication between contractor and labour

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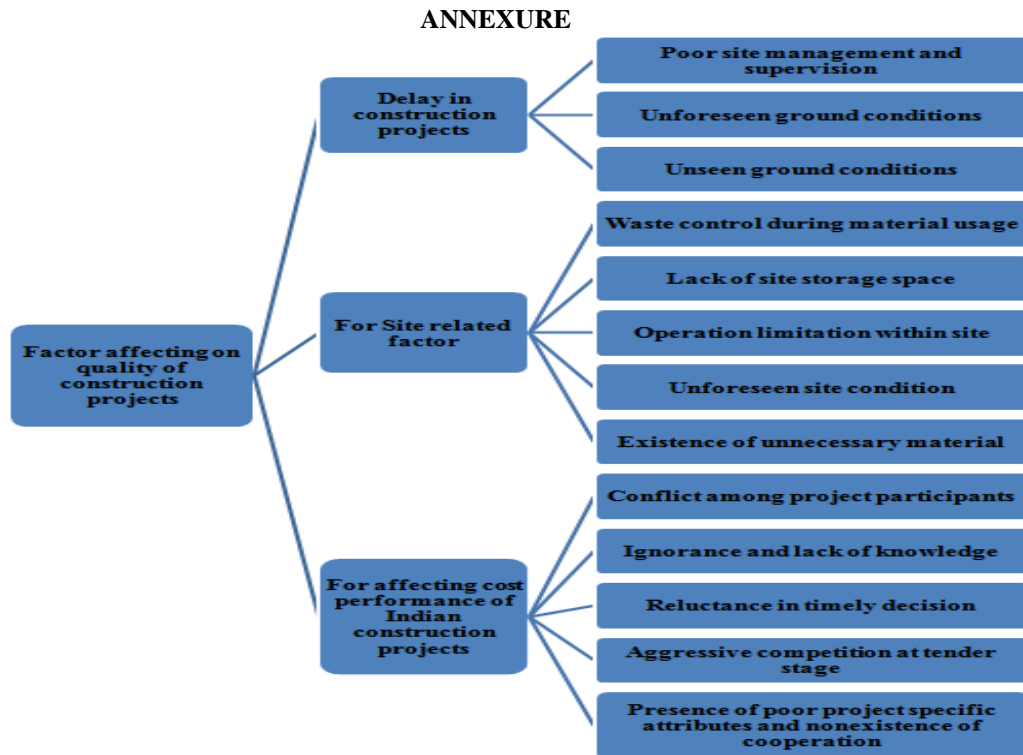


Figure 1 (a): Integrated framework for assessing factors affecting quality management for infrastructure projects



Figure 1 (b): Integrated Framework for Assessing Factors Affecting quality management in infrastructure projects

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