

STUDY OF QUALITY MANAGEMENT AND ISO STANDARD PRACTICES IN THE BUILDING CONSTRUCTION INDUSTRY

Akshay J. Shinde⁽¹⁾, Prof. A. V. Hankare⁽²⁾

⁽¹⁾PG Student (M.Tech. Construction and Management)

⁽²⁾Assistant Professor (Civil Engineering Department)

^(1,2)Tatyasaheb Kore Institute of Engineering and Technology, Warananagar, Maharashtra, (India)

ABSTRACT - The construction industry in India has been struggling with quality issues for many years. Quality will have to be integrated into all aspects of a successful organization. Quality is a key driver of market share. Quality is generally used concerning the "end-use of the project". It can also be defined as "Perfection, fast delivery of the product, eliminating waste in the product, consistency in performance, and total customer service and satisfaction". Quality of construction project will be regarded as the fulfillment of expectations of project participants. A significant amount of the budget is spent each year on infrastructure and other development projects. During the last decade's construction industry has been heavily criticized for its performance and productivity in other industries. This study aims to provide a comprehensive analysis of the various standards and practices in the construction industry to help improve the quality of projects.

Key Words: Quality, Quality Management System, Building Construction, ISO Standards, Quality Control, Total Quality Management

INTRODUCTION:

Quality is one of critical factors for the success of construction projects. Quality of a construction projects, as well as project success can be regarded as fulfillment of expectations of project participants. A significant amount of budget is spent each year on infrastructure development projects. Since the quality outcomes of the projects are not according to required standards, faulty construction takes place. So, consequently additional investments are required for removal of defects and maintenance work.

Quality management is progressively utilized by construction organizations as an activity to take care of value issues and to address the issues of the end client if at any point an industry should fuse the idea of QMS (Quality Management System) in the development segment. Nonetheless, actualizing QMS standards in the development division is especially troublesome because of the numerous gatherings included.

The point of value the quality management is to get things done at first time, taking out rework and waste. To accomplish this, it is vital spotlight on the "Processes". A process is nothing but task or also it can be task series. A process may includes the drawing preparation, vibration of fresh concrete or the way in which the quality manager acts with a client and with other members of construction projects. Quality administration places accentuation on anticipation not on revision. The objective which works that is 100% free of blunders, free mishaps and 100% free of waste. The fundamental goal is to make the quality attention to the development organization particularly little scale enterprises.

1.1 GENERAL:

Every producing organization worries with quality of its product. Whereas it's important that quality necessities ought to be glad and project schedule met, it's additionally equally vital to contemplate the implications of poor quality such as:

- Product fails
- It goes over competitive valuation
- Its delivery goes on the far side beyond deadline
- Loss of business: Poor styles or defective merchandise or poor services may result in loss of business.
- Liability: Damages and injuries ensuring from faulty style.
- Productivity loss
- Cost: Poor quality of product increases production and market cost.

According to researches, ISO standards, quality management system (QMS), the quality assurance (QA) system and the quality control (QC) system are among the many types of standards that provide several indicators on the way to establishing a high-quality process management systems to manage the process that affects their products and services.

When quality is fully and properly addressed through a quality management plan, it leads to greater efficiencies as the plans are designed to:

1.	Standardize process.
2.	Minimize waste.
3.	Eliminate waste.
4.	Increase in profit.
5.	Reduce in efficiencies.
6.	Improve work practices.
7.	Increases workers measures.
8.	Increases the opportunity for greater market share.

1.2 Scope of Project:

Quality Management is an integral part of any project. It helps minimize the risks, improve efficiency and minimize rework.

1.3 Importance of Quality Control in Construction:

- Quality control (QC) in construction is the process of identifying and verifying the project is built to plan and the tolerances allowable by industry standard and engineering practices have been met or battered and the finished project (and all phases to get there) meet with the quality standards of the architect, engineer, owner, and general contractor.
- On construction projects there are many subcontractors, all of which have specific responsibilities. Superintendents and project managers try to maintain high quality standards, but they can't everywhere at once.
- In addition, a great general contractual worker or designer will have on staff quality control individual, somebody who is in charge of experiencing the structure or venture, guaranteeing consistence, and keeping up an on-going rundown of restorative things that must be cultivated before the temporary worker who introduced it.
- QC technicians generally keep a very detailed binder, separated by rears/rooms/phases of the project with notes of items that must be either indentified or corrected, with sign-off as each is accomplished. This binder becomes part of construction record and is an

important element to construction on time with expected quality maintained.

1.4 Factors Affecting Quality of Construction:

There are various factors which are affecting on quality of construction. Among these factors following are the major factors which affects majorly to the quality of construction. These factors are as follows:

1. Limitation of Finance:

This is the most important factor of building construction and in every of work where contractor had to plan for financial payment to eliminate the risk because it might affect the project.

2. Limitation of Communication:

Construction site sometimes located in rural areas or far away from the community. It might be a cause which affected transportation causing difficulty and delay, therefore it was a limitation that contractor had to consider.

3. Limitation of Labour and Wage:

In many different local areas, the problem related to labour such as lack of skilled labour, complex work, not being able to find labour might occur, which might be causes of work difficulty, delay and low quality.

4. Limitation of Weather:

Whether was one of several important limitations was because it sometimes cannot be prevented such s flooding, storm, etc.

5. Limitation of Building and Construction Detail:

Problems of building plan and construction detail were found such as drawing not clear, drawing mistake, so they also become big problems in construction.

6. Limitation of Material and Equipment:

Some construction works might use special machines or equipment which contractor had to study carefully regarding performances, suitability for work and prepare enough equipment for each work.

7. Limitation of Time:

Some construction work had to be completed within a time limit such as in case of urgent works. They caned limitation of work planning and they also caused other management problem.

8. Construction Methodology:

Construction works in some areas could not be performed by regular method because there were buildings around construction site, so the

contractor had to find new methods that were suitable to construct and sometimes used specialist engineer when some construction works were in step of construction.

9. Training Policies:

Looking into the general training policy, the ISO 9001 registered companies have more concern on the training of their employees than the non-registered ones. For non-registered companies, the company may reimburse the course fees but employees have to attend training sessions outside of working hours.

10. Limitation of Rule or Regulation:

This problem also has major influence on the construction, such as the problem of traffic that can lead to transport, the problem of hiring staff, the problem of building codes, etc.

11. Lack of co-ordination among departments:

Co-ordination is very important for project success. Because co-ordination between the departments is failed that may leads to wrong execution or may affect the sequence of work.

2. DISCUSSION:

In this project, the recent study regarding quality management and ISO standards is reviewed through literature. To understand recent development in quality management techniques and ISO standards. Based on this study, formation of a questionnaire to find out the quality and standard practices in building construction industry of Kolhapur and Sangli region. The statistical data analysis using SPSS software will be helpful for set up the quality and ISO standard measurements in the building construction industry. From this whole study we are suggesting best suitable measures and benefits for implementing quality management and ISO standard practices in building construction industry of Kolhapur and Sangli region.

3. LITERATURE REVIEW:

1) Richard Jimoh, Luqman Oyewobi, Rasheed Isa, and Ibrahim Waziri (January 2018) In this paper, the relationship between total quality management and organizational performance is discussed. The nature of the relationship, as well as the influence of TQM practices and strategies, were examined. This study was done with different measures of performance among large and medium-sized construction companies in the Nigerian construction industry. A question like what is the extent of implementation of TQM practices and strategies for

improving organization performance were formulated. Qualitative and Quantitative research and methods were implemented. This was achieved through in-depth structured interviews with 10 large and medium-sized construction firms in Abuja. Cronbach's alpha was used to examine the internal consistency and an inter-item correlation was conducted. The TQM importance and quality practices limitations were states in it

2) Tiong Kung Leong and Norhayati Zakuan (2014) This paper highlights, the implementation of a quality management system (QMS) has been widely adopted in the construction industry. The companies which handling mega-projects were especially adopted QMS. QMS has improved communication problems, minimized mistakes, reduced rework, and wastage of materials. Exercised better control of sub-contractors and suppliers. So the productivity, profitability and market share gradually increased which enabled contractors to meet client's requirements. ISO 9000 was adopted all over the world towards the end of the 1990s for quality improvement ISO 9000 has become the most popular QMS in the construction industry in the recent past.

Engineering consultancy companies (ECC) plays important role in the construction industry. They assist in designing the initial and critical stages of project management. That's why it is important to implement QMS in ECC so that the quality of projects and organizational performance in the Malaysian construction industry are reviewed to compare the current theories and practices in Malaysia with the whole construction industry over the world.

3) Kenneth T. Sullivan (October 2011) The paper contains information about, the quality management programs such as total quality management (TQM), lean production, and six sigma were analyzed. The basis for their success and failure, and their documented level of susceptibility in the construction industry. These programs were then contrasted to the best value system, an owner-driven quality program that has been tested recently in the construction industry and documented to produce encouraging results. Based on the findings, it was proposed that most quality management programs were designed to be investigated by the vendor. By improving the company's ability to deliver a quantifiable, replicable product or service. It also states that the quality management systems were significant to all markets, processes, and service industries.

4) Abdulaziz A. Bubshait, Tawfiq H. Al-Atiq (December 1999) Author said that an elevation of the quality system of 15 construction contractors in Saudi Arabia is discussed here. The evaluation was performed against the ISO 9000

standard. The ISO 9000 clauses are most often compiled to dealing with inspection and testing, control of nonconformance product and handling, storage and preservation. In Saudi Arabia, the large volume of construction projects in terms of number and size has led giant, multi-national construction contractors to the local market and created intensive competition. Out of 34 major construction contractors. Located in the eastern province of Saudi Arabia only 15 contractors agreed to participate in the study. Quality systems registration, applicability and benefits of ISO 9000 standards, difficulties surrounding ISO 9000 requirements, obstacles to implementation is given as assessment findings

5) A.I. Ramanova (2016) The paper deals with, state power in creation, implementation, management and control of management system does not show increased interest. So the solution to this problem is the introduction of the new quality management system. The task of self-regulation organizations. Self-regulation system to propose measures of improving the quality of construction products for the successful completion of this goal the prerequisites of the self-regulation establishment. Study of foreign experience in development in it. Review and analysis of the existing quality control system in the Republic of Tatarstan is to be done. Formation of the problem was carried out also international quality measures and actions in management were studied.

6) Sahil Sanjeev Salvi, Samiksha Shridhar Kerkar (February 2020) This paper provides an overview of the requirement of quality assurance (QA) and quality control (QC) in the construction industry is increased considerably in recent times because of technology, advancement and higher expectations of the user. The idea of quality formulating questions like what's mean by quality? how it's achieved? Etc which were responded in YES or NO. The QA and QC concepts were studied and understand the specifications which applied to the performance of building construction. The general process of performance of related specifications and testing procedures for construction material was understood. Develop a checklist for onsite inspection for appraising the QA and QC data. The role and advantages of ISO 9000 in construction were defined. The construction specification in a similar project to be executed in the future should be modified based on lessons learned during quality control exercised on the previous project.

4. OBJECTIVES:

- To study the quality management system and ISO standard practices in Building construction industry.
- To identify the factors that affect quality of building construction.
- To analyze the quality management system and ISO standards practices in building construction industry by statistical analysis using SPSS software of Kolhapur and Sangli region.
- To suggesting and implementing quality management practices on actual site.

5. METHODOLOGY:

The following methodology will be adopted -

- Collection of preliminary information through a literature survey.
- Identify the factors affecting to quality of building construction.
- Study of quality management systems such as Quality control tools, Total Quality Management (TQM), Inventory and Inventory control techniques, Dimensions of service quality, and Important ISO standards for building construction industry.
- Preparation of questionnaire for assessing current quality management and ISO standard practices in building construction industry.
- Analysis of questionnaire survey from data collected through construction site by statistical analysis using SPSS software.
- Suggesting and implementing best recommendations for quality improvement on actual site in building construction industry of Kolhapur and Sangli region.

6. CONCLUSION:

After studying all the above mentioned points and factors we come to conclusion that for the successful performance of any organization, the quality management should be implemented. For the success of construction projects one of the critical factors is nothing but Quality. Project success as well as quality of construction projects can be regarded as the fulfillment of the expectations of the project participants. Implementation of standards and quality practices in any organization and construction sector leads to time and cost optimization, increased efficiency in performance and optimum use of resource. Standards and quality practices in building construction, maintenance and services also leads to

minimization of the indirect cost belonging to project and also leads to reduction in the time, wastage of materials, manpower etc.

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