

# Evaluate the Quality Management system by implementing Quality Matrix in Residential Project

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**Abstract:** Quality Management Systems (QMS) are being operated in some sectors in Turkey but it is rare to meet these systems in construction industry. There are many hindrances that make it difficult to apply these systems effectively due to the nature of construction and therefore, no objective way of measuring the effectiveness of these systems exists in construction industry. This study aims to light the way for the studies and further researches in finding a way to measure the effectiveness of QMS. Matrix model will develop as a way to measure the effectiveness of QMS. Towards this goal, firstly a questionnaire survey will be conducted to a sample of construction firms that have or have not passed through these systems. Appraising some findings from the survey results; the number of QMS operating firms and their way of implementing QMS factors are determined by using the Statistical Method These principles are evaluated on a case study by means of developing quality measurement matrices for QMS operating firms and different results conclude.

**Keywords:** Quality management systems; Effectiveness; Construction industry; Quality matrix analysis.

## 1. INTRODUCTION

Quality has become a very popular subject in recent years due to conceptual changes in the industry. Quality and quality systems are topics which have been receiving increasing attention worldwide. The product in any industry should be manufactured to a required standard, one that provides customer satisfaction and value for money. Quality is one of the critical success factors in construction industry. The need for achieving quality of the finished product in the building construction is very important. The high cost of buildings makes it necessary to ensure quality of the finished product. Quality is an essential element for sustainability and customer satisfaction. In construction projects, quality performance is considered as vital for client satisfaction. This study is intended to provide clients, project managers, designers, and contractors with necessary information needed to better manage the quality of a construction building projects by identify the factors that affect process quality of construction projects and to rank them by degree of importance. Quality can be defined as consistently 'meeting' or 'Exceeding' the customer expectations', or 'compliance with customer specification'. No matter what definition we follow for quality, it becomes very complex when we try to put it into actual practice. Developing a quality system is the first step towards improving quality in construction industry.

For the implementation of quality management in construction projects, the concepts of quality planning (identification of quality standards), quality assurance (evaluation of overall project performance) and quality control (monitoring of specific project results). Several tools and techniques will identified as part of the implementation process, like benefit-cost analysis, benchmarking, flow-charting, design of experiments, cost of quality, quality audits, inspection, control charts, pareto diagrams, statistical sampling, flow-charting and trend analysis.

## 2. Background

During the last decades construction industry has been heavily criticized for its performance and productivity in relation to other industries. With the turn of the new millennium, it appears that the construction industry is going through an intense period of introspection, which is exacerbated by increased technological and social change. These changes are altering the tempo of the environment within which construction operates. Moreover, such changes extensively affect the way business is carried. No organization operating in the construction industry, whether large or small, private or public, can afford to ignore its changing environments if it is to survive. The construction industry shows a rapid pace in 21<sup>st</sup> century. Construction companies have recognized something new; the culture of quality. They have opened their doors to Quality Management Systems (QMS).

## 3. Need of Study

In other manufacturing industries are establishing the QMS (Quality Management system) but in construction industry we cannot establish even QMS (Quality Management System). The reason behind is every construction project is unique and quality is ever changing factor i.e. quality change time to time, place to place. But many common activities in construction project like the concrete work, Block work, plastering, etc. In those common works are affected by some major factors like quality of material, quality of manpower, construction detailing, concrete work, etc. in this thesis is very much helpful for find out the major factors and give result with cost of poor quality. This thesis is more helpful for creating cost oriented quality awareness to low level construction companies.

#### 4. Objective of Study

- To study the quality measures in the maintain their existences in construction industry.
- To find the most affecting factor to quality management system.
- To identify the most crucial factor which affect Quality Management System and Provide reliability for the reputation of firms.
- To generate matrix models to evaluate the success of QMS.
- To improve quality and productivity by generating matrix as per mentation and customers feedback.

#### 5. Scope of Study

- This study aims to light the way for the studies and further researches in finding a way to measure the effectiveness of QMS.
- This will be carried out by showing that quality improvement efforts can be quantified, measured and analyzed.
- Site interview and questionnaire survey through collect the data of quality measures.
- Statistical method will be used for generate the matrix models.
- Research work is based upon the quality policy of different company and questionnaire will be filled by the representative of the construction company.

#### 6. Elements of QMS

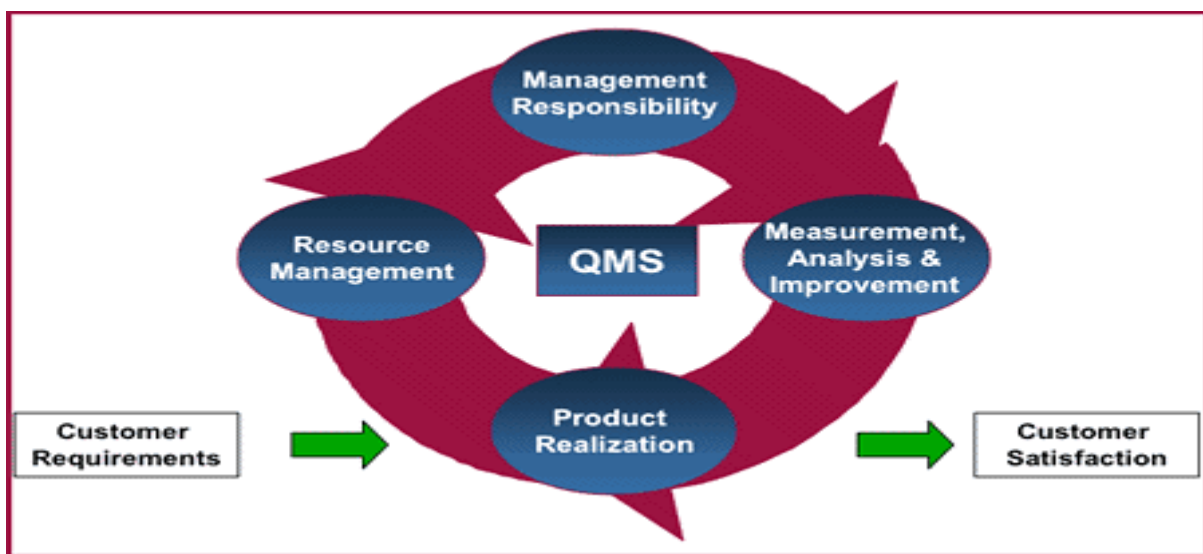


Fig 1: Elements of Quality Management System

- Management Responsibility:** Provide a vision. Show commitment. Focus on the customer. Define policy. Keep everyone informed.
- Measurement Analysis & improvement:** Identify current and potential problems. Monitor and measure customer satisfaction. Perform internal audits. Fix problems.
- Resource Management:** Assign the right person to the job. Create and maintain positive workspace.
- Product Realization:** Clearly understand customer, product, legal and design requirements. Ensure specifications are followed. Check your suppliers.

#### 7. Concept of QMS

- A Quality Management System in its basic concept is quite simple. It seeks to: Recognize the external quality related requirements specified in Licenses to Trade, guidelines, specified customer requirements, and the chosen management system standard.
- Ensure that all requirements have been documented within the management system in the appropriate location in terms of defined specific system requirements.
- Confirm that employees receive applicable training in the quality system requirements.
- Outline performance processes, where applicable, to the quality system requirements.
- Produce records or evidence that system requirements have been met.
- Measure, monitor and report the extent of compliance with these performance procedures.
- Continually monitor and analyze changes to the requirements and confirm that all changes are reflected in changes to the specific requirements when necessary.
- Execute the audit and analyze the system processes and correct them when necessary.
- Include processes that will help continually improve the quality system.

**8. Benefits of Quality Management System**

- Satisfied customers by meeting their requirements
- Increased market share
- Compete globally
- Minimize waste, scrap and rework
- Increase customer confidence

**Customers and users benefit by receiving the products and services that are:**

- Conforming to the requirements
- Dependable and reliable
- Available when needed

**Maintainable Owners and investors benefit by:**

- Increased return on investment
- Improved operational results
- Increased market share
- Increased profits

**Mandatory internal audits & reviews People in the organization benefit by:**

- Better working conditions
- Better process flow and control
- Increased job satisfaction
- Improved health and safety

**Improved morale Society benefits by:**

- Fulfillment of legal and regulatory requirements
- Improved health and safety
- Reduced environmental impact
- Increased security

**CONCLUSION**

It is determined that some of the construction firms are operating QMS and no way of measuring the effectiveness of these systems has been developed apart from their perceptions. To improve effectiveness in construction firms, it is inappropriate way to encourage contractors by new ideas for the motivation and support of staff established under the full support of government

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