



A STUDY ON THE EFFECT OF ISO QUALITY MANAGEMENT SYSTEM FOR THE IMPROVEMENT OF CONSTRUCTION PROJECT PERFORMANCE

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Abstract- The study of this paper is to identify the major reasons for cost overruns in construction projects in India as well as the critical success factors that are helping to avoid the cost overruns. The study is important as it sheds light on how construction professionals can implement cost control measures in place to avoid recurrence of these problems. The attainment of effective cost control measures for development projects is a prerequisite for the successful completion of such projects, which are vital for the country's socio-economic advancement. Questionnaire survey will be carried out in the phase of project and with the help of above study we will be able to find out major causes of cost overrun. Here, we have provided the literature review and the proposed questionnaire that will be used to obtain data from various practitioners. This data then will be used to find out the major reasons causing Cost Overruns.

INTRODUCTION

1.1 General

Quality has become a very popular subject in recent years due to conceptual changes in the industry. The definition of quality in the past as compliance to standards is now found to be inadequate and replaced with the current definition as customer satisfaction. The approach to quality has evolved from control (quality control) to management (quality management) through assurance (quality assurance) and reached policies like Total Quality Management (TQM). In developed countries, where quality systems have been established long time ago, the principle has become to produce quality rather than to control

it at the end. The new approaches are not only beneficial to the customer but also to the manufacturer as cost of quality are optimized to minimize the total loss. The results are less cost per unit of better quality, more shares in the market and increased profits. In construction industry, the quality is generally considered to be very costly, and QC or QC/QA organizations are established only as a result of contractual requirements. In construction industry, production is different from factory or plant production; therefore quality considerations need special care. Especially when the production (construction/installation) is not in place, cost of remedial works may go extremely high if attention is not paid to quality assurance. In the modern construction market, quality is a major function in construction organization. Quality is rapidly becoming as important factor as price has been traditionally.

1.2 ISO in general

The international organization for standardization (ISO) is an international standard setting body composed of representatives from various national standards organizations. It was one of the first organisations granted general consultative status with the United Nations Economic and Social Council. ISO, the international organization for standardization, is an independent, non-governmental organization, the members of which are the standards organizations of the 162 member countries. Use of the standards aids in the creation of products and services that are safe, reliable and good quality. The standards help businesses increase productivity while minimizing errors and waste.

1.3 ISO in Indian Construction

The ISO 9000 family of quality management

systems standards is designed to help organizations ensure that they meet the needs of customers and other stakeholders while meeting statutory and regulatory requirements related to a product or program. ISO 9000 deals with the fundamentals of quality management systems, including the eight management principles upon which the family of standards is based. ISO 9001 deals with the requirements that organizations wishing to meet the standard must fulfil. Third-party certification bodies provide independent confirmation that organizations meet the requirements of ISO 9001. Over one million organizations worldwide are independently certified, making ISO 9001 one of the most widely used management tools in the world today. However, the ISO certification process has been criticized as being wasteful and not being useful for all organizations.

1.4 Eight quality management principles in indian construction

The ISO 9000 series are based on eight quality management principles:

The eight quality management principles are defined in ISO 9000:2005, Quality management system Fundamentals and vocabulary, and in ISO 9004:2009. Managing for the sustained success of an organization .A quality management approach.

1.4.1 Principle 1 — Customer focus

Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

1.4.2 Principle 2 — Leadership

Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

1.4.3 Principle 3 — Involvement of people

People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

1.4.4 Principle 4 — Process approach

A desired result is achieved more efficiently when activities and related resources are managed as a process.

1.4.5 Principle 5 System approach to management

Identifying, understanding and managing interrelated processes as a system contributes to

the organization's effectiveness and efficiency in achieving its objectives.

1.4.6 Principle 6 — Continual improvement

Continual improvement of the organization's overall performance should be a permanent objective of the organization.

1.4.7 Principle 7 —Factual approach to decision making

Effective decisions are based on the analysis of data and information.

1.4.8 Principle 8 — Mutually beneficial supplier relationships

An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

1.5 Aim and Objective

The overall aim of this project is to let everyone know what quality management is, and to have a deeper study on the application of quality management during construction period, therefore, a better project output and better value for both clients and constructor. Managing for quality is the process of identifying and administrating the activities needed to achieve the customer driven objectives of an organization. A successful construction industry is essential for us, we all benefit from high quality.

The objectives of the research are described below,

- Creates greater customer confidence and satisfaction.
- Improves market confidence in the construction industry_
- Increases the overall profit of the company.
- Reduces compliance with applicable rules risks.
- To increase credibility and competitive.

1.6 Scope of this project

• To develop their quality management system for the improvement of construction project performance.

1.7 Juran's policy

In 1951, the first edition of juran's quality control handbook was published.Juran's policy classifies the cost of quality into three classes. They are

- Failure costs
- Appraisal costs
- Prevention costs

Trilogy(quality planning, quality control and quality improvement) shows how an organization can improve every aspect by better

understanding of the relationship between processes that plan, control and improve quality as well as business results,

1, To attain quality, it is well to begin by establishing the "vision" for the organization, along with policies and goals.

2. Managing for quality makes extensive use of three such managerial process is quality planning, quality control and quality improvement.

3, The processes are known as the "Jurantrilogy".Steps of quality improvement in Juran 's policy:

1. Build awareness of the need and opportunity for improvement.
2. Set goals for improvement.
3. Organise to reach the goals.
4. Provide training.
5. Carry out projects to solve problem.
6. Report progress.
7. Give recognition.
8. Communication result.
9. Keep score
10. Maintain momentum by making annual improvement part of the regular systems and process of the company.

METHODOLOGY

Title selection



Literature review



Deriving objective of the project



Methodology framing



Company selection



Questionnaire selection



ISO certified company ,Non ISO certified company



Organizational structure



Analyzing the quality policy



Collecting data regarding quality factor



Analyzing the factors



Determining the quality



Comparing their quality



Giving suggestions to non ISO certified companies regarding quality



Conclusion

RESEARCH METHODOLOGY

Literature study and analytical research are my major learning methods, which play an important role in this report. Analytical research involves analyzing existing problems & quality information. Today's world is based on information technology and huge amounts of information are available on all kinds of subject. In addition, the report is more credible and practical based on the study of real case and visit of quality engineer.To achieve the research objectives, a comprehensive structured questionnaire is designed to gather information from clients, consultants and contractors in the Hong Kong construction industry in examining their degrees of agreement on:

- (1)Quality performance and consultant services
- (2) Drawbacks for contractors
- (3) Contractors' benefits gained
- (4) Adoption of total quality management (TQM)

in the implementation of ISO 9000 QMS.

RESULTS AND DISCUSSIONS

The respondents' profile are shown in Table 1. Majority of the respondents are managers (about 33.33%) and coordinators/engineers (about 26.67%), followed by senior managers and surveyors (about 13.33% each), and directors and quality managers (about 6.67% each). Nearly half of the respondents (about 46.90%) have over 15 years working experience and the rest of the respondents have at least 5years experience in the construction industry.Bothsampled private residential and government building projects amount to about 33.33%, private commercial buildings account for about 20% and public housing for about 13.33% of total projects. Most of the sampled projects (about 86.90%) are over 50 million Hong Kong dollars while the contract period range is uniformly under 48 months.

QUALITY FACTORS

The quality factors are used to analyse the quality management system for the improvement of construction project performance.

1. Quality planning

2. Continuous improvement
3. Defect prevention
4. Zero defects
5. Supplier certification
6. Quality circle
7. Quality audit
8. Quality assurance
9. Roll of quality department
10. High level of customer satisfaction
11. Performance improvement
12. Parameters
13. Dimensions of quality
14. Quality culture in organization

CONCLUSION

This thesis was studied and gathered information regarding quality issues and problems that vary between ISO certified construction company and non ISO certified construction company. Literatures have been collected and studied regarding quality management, ISO and related issues. The questionnaire was prepared based on literature collection, real time issues existing in site and with Juran's quality policy as a base. Questionnaire survey, analysis, identification of quality issue has been done and suggestions have been given to non ISO certified company and the result was traced,

According to Juran's policy the factors of quality control (factors 10, 1 and 12), quality assurance (factors 1, 2 and 3) and quality planning (factors 4, 5 and 6) is analysed by RH method using Microsoft office excel software and compared their factors by ranking.

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