

A STUDY OF THE IMPROVEMENT IN QUALITY MANAGEMENT WITH DATABASE

Tai Sik Lee

Professor, Hanyang University, Ansan, Korea

Young Hyun Kim

Ph.D Candidate, Hanyang University, Ansan, Korea

Hee Chul Lee

M.S., Hanyang University, Ansan, Korea

ABSTRACT

Digitalization or database modeling occurs in every industry but is especially important in the construction industry. So the need arises for database modeling to be studied in this industry. The construction industry includes many partners and generates enormous amounts of information during the life cycle of each project.

In each construction project, it is important that the owner's requirements in terms of quality be satisfied. The manufacturing industry can produce a repeat product and sampling but the construction industry cannot. When the quality requirements are not met, that means a loss for society or in the economy.

A digital database must be constructed for the efficient management in order to ensure a link between the quality requirements and the construction process. For this linking to work, process standardization is needed. Quality management must go side by side with scheduling, cost management, and resource management, and must be integrated into all aspects of construction. This study analyzes the relationship among quality requirements for all aspects of construction, using the standard classification system now in place at the Korea Institute of Construction Technology..

This study explores the relationship between the Work Breakdown Structure (WBS) and quality management items in the life cycle of a construction project and models quality management database with business process re-engineering.

This study has the intention to develop a Total Quality Management System (TQMS) to function during the life cycle.

KEYWORD

TQM, Quality Control, Quality Management, Database

1. INTRODUCTION

1.1 The Background and Purpose of Study

The quality revolution that began in the 1980s is now bringing about a management revolution. This applies not only to the manufacturing industry but also to the construction industry. After the Sung Soo Bridge collapsed in Korea, everybody is now focusing on the matter of quality control. Universally, most people think that a checklist determines the quality of a construction product during construction time, but this study demonstrates that that particular belief is a misconception. In addition, this study proves what area and element determines the quality of a construction product.

(This study uses the word *quality management* in the general sense for management of quality.)

1.2 Definition of Quality

Quality is specified in three areas: quality engineering, quality control, and quality assurance. Quality engineering produces procedures and design standards to be used during the construction of a structure, including specifications, which also determine the quality control's base policy. Specifically, this part includes the engineer's portion as well as the administrator's portion toward quality.

The quality control process includes setting specific standards for construction efficiency (usually through the plans and specification); measuring variances from the standards; taking action to correct or minimize adverse variance; and, lastly, planning for improvements in the standards themselves and in conformance with the standards.

Total quality management is divided into management objects and subjects by management level. The above figure shows management subjects and content performance for each step and goal by province.

2. ELEMENTS CONNECTED WITH QUALITY FOR EACH STEP OF LIFE CYCLE

Quality related items are followed in each life-cycle phase. First, the planning phase includes draft decisions for quality management planning, quality management manual composition, and specification examination. Second, the design phase includes what specified designs are required. Last, the construction phase includes all sorts of testing (non-destructive testing, in-place testing, laboratory testing, user-testing of materials), inspection (visual inspection, hold-point inspection, receiving inspection.), materials control (site control of material, tagging nonconforming items), and document control

3. INSPECTION OF EXISTING QUALITY MANAGEMENT SYSTEM

3.1 Background of Existing System

Quality management systems have changed through the conversion from the 1960s' method to methods in the 1970s'. The former meant independent departments setting up for quality management while the latter refers to the Total Quality Management (TQM) method. An automated quality management was needed for more efficient management of a united quality management system.

During a period that the Internet was not universal, the stand-alone method was the most frequent method used in the states for quality management system. Now that method must be replaced with a client/server system.

3.2 Contents of Existing Quality Management

The existing quality management system was formed by hand and this was difficult for management because of the complexity involved. Most people mistakenly believed that the investment needed to maximize quality management would raise of unit cost. They simply didn't understand that the cost of failure can be decreased by an investment in quality prevention cost. To meet that need, quality management is necessary.

4. QUALITY MANAGEMENT CONNECTED WITH SCHEDULING: RESOURCE AND COST THROUGH APPLICATION OF DATABASE

Lately, studies of the Computer Integrated Construction (CIC) system make up the main type of research that is related to work information. Characteristic of such study is that all participants in the construction industry hold information in common. If such information can be acquired early in the life cycle of a project then quality management can be integrated throughout the progress of the project schedule. For this to happen, information must be exchanged quickly because quality management is connected with the progress of scheduling and scheduling, resource and cost have the higher connection than the others in the field. Quality management requires programming to be integrated with. Figure 1 is ER-Diagram of Database be worked on the basis of such connection.

On the basis of such practical application, TQM (Total Quality Management) has been designed. This study puts every procedure and checklists necessary in the field together for easy application by the end-user. In addition, this study embodies a working diary on the web, available daily.

5. CONCLUSION

According to the above, efficient quality management cannot be achieved through a simple checklist. It must be continuously ensured throughout the construction life cycle. Most importantly, quality management of the planning phase has a great impact during the life cycle of a construction project. And the plan for connection of resource and cost is important because of characteristic of quality management. Therefore, Managing and unifying them may be TQM for real mean. For TQM to be performed effectively, quality management requires a database. Hereafter, this study needs to study the important measures for quality management by life cycle.