

A feasibility evaluation on the outsourcing of quality testing and inspection

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Abstract

This paper evaluates the feasibility of outsourcing testing and inspection activities in construction work, based on a survey of interested parties and an evaluation using the Analytic Hierarchy Process (AHP) with experts on quality control. For the AHP, five criteria were adopted and a number of pair-wise comparisons were performed in two stages. Finally, the weighting coefficient to approve the outsourcing was calculated at 0.606, suggesting it more reasonable to permit rather than prohibit outsourcing. Outsourcing of testing/inspection is necessary to enhance the objectivity and expert skill, despite the reduction in the sense of responsibility among the testing technicians and inspectors. However, to initiate outsourcing, it is necessary to first separate the 'quality testing and inspection' activities from the 'quality control' activities at the job site. Furthermore, the project owner should preferably make the decision to outsource testing and inspection activities and select the testing agency.

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1. Introduction

Quality control (QC) of construction work is an important process for the construction industry and has been systemized thus far in Korea. However, the recognition of the importance of QC is still low. Thus, there is a tendency for the QC to be performed perfunctorily, with the employment of unqualified persons lacking any direct relation with QC. The appropriation of quality management costs and independence of the quality management organization is still unsatisfactory. In addition, a social Career Develop-

ment Program for personnel in quality management is insufficient.

In general, QC activities include planning for quality management, examining design drawings, checking specifications, purchasing, inspecting and testing. Inspections and tests are fundamental to the quality management process [3,7].

As the scales of construction projects have expanded recently, the QC work load including quality testing and inspection at a job site is on the rise. As a result, there is a growing tendency for construction companies to outsource labour-intensive quality testing and inspection activities to external specialized testing agencies [4]. Accordingly, the number of such specialized testing agencies that perform quality testing and inspection at job sites is also on the rise. According to Williams [15] and Schexnayder [13], outsourcing of QC is relatively common place in many countries such as the United States, Japan, Korea and Taiwan.

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Construction companies gain by being faithful to their inherent QC activities by outsourcing their testing and inspection activities. On the other hand, there exists some concern over the decreased sense of responsibility in case of outsourced quality testing and inspection. Moreover, there is an opinion that outsourcing is not desirable since QC is an inherent part of a contractor’s business [1,2].

The purposes of this research are to evaluate the feasibility, effectiveness and necessity of outsourcing tests and inspection works using the Analytic Hierarchy Process (AHP), and to propose policies in connection with the outsourcing of testing/inspection activities.

2. Review of arguments for and against outsourcing

According to the results of a survey undertaken by Choi [5] of construction engineers in Korea, 42.2% of the survey respondents indicated that outsourcing of testing and inspection activities might enhance the specialized skills of testing technicians and inspectors. Building constructors (20%) tended to emphasize the importance of outsourcing tests and inspections for downsizing manpower at job sites. The survey respondents (18.9%) indicated that outsourcing is desirable in order to separate labour-intensive testing and inspection works from QC activities.

Conversely, if tests and inspections are outsourced, 27.8% of respondents replied that the testing technicians from the testing agency might be subordinated to the prime contractor. Moreover, 18.9% indicated that outsourcing might lead to a reduced sense of responsibility among testers (see Fig. 1).

3. Feasibility evaluation of outsourcing by the AHP

3.1. Outlook of the analytic hierarchy process

The AHP (Analytic Hierarchy Process) is a structured approach to decision making developed by Saaty (1995). The AHP is a weighted factor-scoring model and has the

ability to detect and incorporate inconsistencies inherent in the decision making process. Therefore, the AHP has been applied to a wide variety of decision making problems, including the evaluation of alternatives.

Accordingly, this study introduces the AHP to draw reasonable conclusions in coping with the above mentioned controversial points, particularly regarding whether the outsourcing of testing/inspection is reasonable or not.

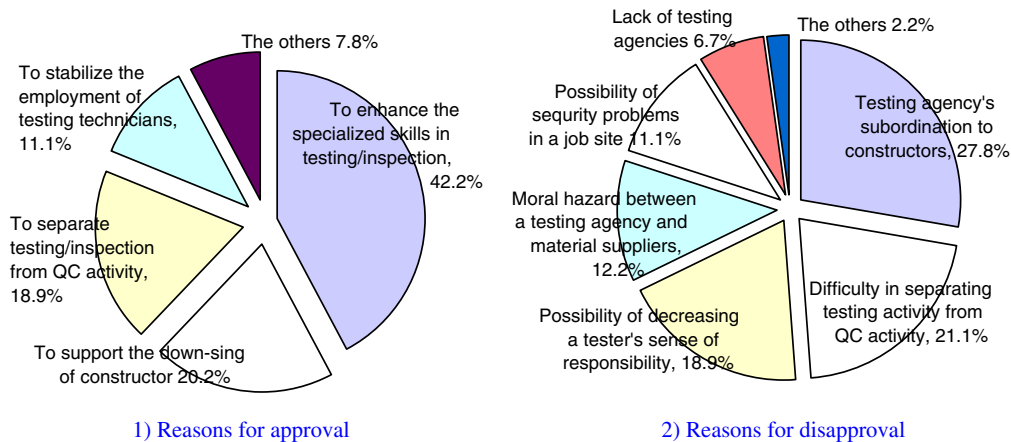
For the AHP, a questionnaire survey was undertaken in March of 2006 of 22 experts on quality management in Korea. The experts comprised public servants (×2), professors (×3), researchers (×4), construction engineers (×4), graduate students (×3), building material makers (×3), a project owner, a constructor and a public testing institute. To ensure the objectivity of this survey, we excluded specialized testing agencies from the survey. Furthermore, of the 22 experts surveyed, a total of 16 had experience in working for construction companies or as QC engineers.

3.2. Discussion of criteria

In order to evaluate the feasibility of outsourcing test and inspection works by the AHP, the first step was to define the criteria by which feasibility was to be determined. In determining the appropriate criteria, discussions were undertaken with 6 of the 22 experts who took part in the questionnaire survey. As a result, criteria were proposed under the following five questions:

- (1) Can the testing and inspection work be conducted systemically?

Since quality testing/inspection is an integral part of QC, there is some dispute as to how testing/inspection can be separated from QC. Accordingly, provided that the testing/inspection is outsourced, we should examine whether or not the quality inspection and tests can be conducted systemically.



Note: Replied from 90 construction engineers.

Fig. 1. The reasons for and against outsourcing testing/inspection [5].

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