Clarification of question and answer documents in cost estimation work using quantitative analysis

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1. Research Background

In cost estimation work for construction projects, question-and-answer sheets are used to clarify parts of the design documents handed over by the designer that are difficult to judge, as well as content that is not included in the drawings. The creation of this question-and-answer sheet and its exchange occupy much of the work time of designers and cost estimates.

2. Research Objectives and Methods

The purpose of this research is to improve the efficiency of cost estimation work by reducing the time involved in creating question and answer sheets. In this study, we selected four properties for integrated design-build projects in the general construction industry and analyzed the question-and-answer documents exchanged during the basic design stage and detailed design stage. Furthermore, text mining will be performed using free software called KH-Corder.

3. Research Result

As a result of the analysis of the question and answer sheets, it was found that 68% of the questions were questions that the estimater had anticipated answers to in advance, and 78% of the questions were answered appropriately by the estimater. In addition, using text mining, we showed the relationships between words based on frequent words and co-occurrence networks. Fittings and specifications are the top two frequently used words, and are words that often appear in questions and answers. Furthermore, analysis using a co-occurrence network revealed that the two words finish and specification were more important in the basic design stage than in the detailed design stage.

4. Conclusion

As a result of the above, it became clear that most of the questions and answers were based on assumptions made by the cost estimate, and that the assumptions were highly accurate. Additionally, it can be said from the analysis results that in the basic design stage, the finish and specifications are often determined in the Q&A document.