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Analysis of Quality Factor Evaluation Methods in Optimization Time-Cost Trade-off Problem in Construction Projects

The purpose of optimizing the time-cost trade-off problem is to analyze the reduction of the original project time with the lowest cost. In these issues, the impact of project implementation quality on various activities has not been taken into account. Attention to the quality factor goes back to the midnineties. Many articles have been published since then. In the equilibrium discussion, the three objectives of time, cost and quality of the project are to perform a cost-sensitivity analysis of the variations in the duration of activities to obtain the best combination of reduction in activities. This is to minimize total project costs and maximize overall project quality. This paper classifies the issues of time, cost and quality trade-off and examines how to calculate the quality factor in research as well as the relationship between the three objectives of time, cost and quality in projects and project activities. The results of the analysis of the articles show that the evaluation of the quality factor in equilibrium problems can be divided into four categories. In the first case, quality is implicitly assessed through the tasks needed to modify the non-coordinated activities. In the latter case, the quality of each activity is expressed as a function of its duration and cost. In the third case, the quality of an activity in each of its possible execution modes is estimated by experts, and in the latter case, the quality of an activity is assessed by the set of indicators.

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