

Efficiency Assessment of Road Project Delivery Models by Grey System

Theory

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Abstract

In this study, four road project delivery models are analyzed by the grey relational analysis (GRA). The four models are design-bid-build (DBB), design-build (DB), construction management (CM) and design-build-maintenance (DBM). Evaluating road project delivery models is difficult because the projects differ from road to road, state to state and country to country. Thus, the evaluation data of project delivery systems are poor and lacking. Therefore, grey relational analysis and grey entropy weighting method are considered to compare the efficiency of the four road project delivery models. Grey system theory is a multidisciplinary and generic theory dealing with systems characterized by poor information and/or for which information is lacking. According to the result, DBM is the best model. DBB is the worst one and DB is better than CM. The results may provide public sectors to employ an adequate model so as to proceed with road construction project.

Keyword : Road Project Delivery, Design-Bid-Build, Design-Build, Construction Management, Design-Build-Maintenance, Grey Relational Evaluation, Grey Entropy Weighting.