Abstract

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a cooperative game theoretic model for revenue sharing in construction joint ventures

The growing complexity and competitiveness in the construction industry have created a necessity for interfirm collaboration. Construction joint ventures (CJVs) present an opportunity for merging competences of collaborating firms, in addition to sharing costs, resources, and reducing investment risks. One of the major challenges to CJVs formation is reaching a consensus on revenue-sharing strategies within the limited duration for project bidding process. This paper proposes a model for sharing revenue in a CJV based on cooperative game theory solution concepts. In contrast to traditional investment-based revenue sharing approaches, the proposed model defines the fair share for each of the participating parties based on their marginal contribution to the coalition. The authors developed a parametric model based on well-recognized cooperative game theory solutions that can guide decision-makers in the formation phase of a CJV. A case study is applied to test the model and compare the results against traditional revenue sharing concepts. The proposed model enables firms to establish a fair CJV agreement, which satisfies the rationality constraint for each party. For future work, the model will be extended to account for risk allocation and resource sharing, as well as cost estimation uncertainties.