

عنوان مقاله:

Quantitative Risk Allocation in Construction Projects: A Fuzzy-Bargaining Game Approach

محل انتشار:

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خلاصه مقاله:

The quantitative approaches to risk allocation, determine how much of a risk is borne by each party. An equitable risk allocation between the contracting parties plays a vital role in enhancing the performance of the project. This research presents a new quantitative risk allocation approach integrating fuzzy logic and bargaining game theory. Owing to the imprecise and uncertain nature of the costs imposed to the contracting parties at different percentages of risk allocation, fuzzy logic is employed to determine the value of players payoffs based on the opinion and subjective judgment of experts involved in the project. Having determined the value of players payoffs, bargaining game theory is then applied to find the equitable risk allocation between the client and the contractor. Four different methods including symmetric Nash, non-symmetric Nash, non-symmetric Kalai-Smorodinsky and non-symmetric area monotonic are finally implemented to determine the equitable risk allocation. To evaluate the performance of the proposed model, it is implemented in a pipeline project and the quantitative risk allocation is performed for the inflation as one of the most significant identified risks.

کلمات کلیدی:

Quantitative risk allocation, Bargaining game theory, Fuzzy logic, Negotiation

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