

# Risk Sharing Strategies for IPD Projects: Interactional Analysis of Participants' Decision-Making

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## Abstract

In the Integrated Project Delivery (IPD) approach, partner selection, contract signing as well as the signing of participants' task scope, and the setting of incentive plans usually take place before the design of a project has been completed. This brings risks and uncertainties to project management. To overcome these challenges, the proposed framework for risk sharing strategies in IPD projects should consider four levels that interact in the system: (1) risks in goal achievement (such as cost overruns); (2) risks that occur during the project management process; (3) the incentive mechanism; and (4) participants' decisions. In the study described in this paper, the interaction of the participants' decision-making in situations of risk and the factors affecting the interaction were identified and modeled for IPD projects. The equilibria were calculated using game theory, and simulations were carried out to showcase the interaction process and the factors that influence participants' decision-making and project performance. An epidemic model, network analysis, and regression analysis were also used for the simulation and analysis of risk propagation on the risk network. Furthermore, strategies to improve project performance and mitigate risk propagation were developed. In theory, this paper fills the gaps in previous research and proposes an approach for further research on risk sharing practices in IPD projects. The findings are also helpful to practitioners of IPD projects for risk analysis, partner selection, team building, setting of incentive mechanisms, and handling of project risks.

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