

A Game Theoretical Approach for Supplier Interdiction on Single Echelon Supply Chain in Competitive Environment

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Game theory is used widely in many scopes in the literature. In this talk, considering network interdiction approach whose main logic is based on game theory, we analyze the competitive procurement process of two firms which are called leader and follower. It is assumed that these firms, which have the same activity area, operate in the same region and use the same supply chain. It is naturally expected that the firms need same materials (i.e. suppliers). This may put the production levels of each other in danger as the amount of materials in suppliers will reduce. This risk compel the firms to seek various policies for surviving in this competitive environment. The main goal of this talk is to help decision maker(s) (leader) for determining their interdiction policies that will damage to the rival firm (follower) and also increase the leaders profit under changing competitive conditions. This process is modeled as a bi-level mixed integer program and is converted into mixed integer program where the leader explicitly maximizes the minimum total cost (achieved by follower) with interdicting the supplier(s). Finally, significant approaches that help the leader to determine the interdiction plans related to his goals are presented on an explanatory numerical study.