

Managing Procurement from Competing Suppliers with Limited Capacities

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Many industries are characterized by large buyers and suppliers whose decisions are influenced by the strategic interactions among them. Here we present an economic model for a monopolistic buyer that needs to procure a critical item from two candidate suppliers that compete to win the buyer's account. The objective of the buyer is to design a procurement process that would minimize its total cost. We analyze this problem under one static and two dynamic procurement design choices and analyze the impact of these choices and capacities on supplier profits and buyer's procurement cost. All three cases are modeled as noncooperative games and solved under suitable equilibrium concepts. We have found that when the buyer is allowed to choose its purchase quantities independent of the quoted prices, dynamic procurement can lower its cost by as much as 50% as compared to the static procurement game. However, when the buyer is constrained to set a precommitment quantity award sales starting from the low-priced supplier, the savings obtained from dynamic procurement diminishes, but the buyer can still save as much as 12.5% over the cost under static procurement.

About the Speaker

Abdullah Dasci is Associate Professor of Operations Management at the School of Management of Sabanci University. He obtained B.Sc. and M.S. degrees in Industrial Engineering from Bilkent University and Ph.D. in Management from McGill University. Prior to Sabanci, he taught at York University, University of North Carolina at Charlotte, and University of Alberta. His research interests include location theory and supply chain management. His work has appeared in leading management science journals such as Operations Research, IIE Transactions, and European Journal of Operational Research. He is currently an area editor of Computers and Operations Research.