

The Hong Kong Polytechnic University
Department of Logistics and Maritime Studies
Research Seminar

Sourcing and Procurement Cost Allocation in Multi-Division Firms

by

Dr Fang FANG
Assistant Professor
Department of Management
College of Business & Economics
California State University, LA

Date: 28 June 2019 (Friday)
Time: 10:30am - 11:30am
Venue: R501, Shirley Chan Building
The Hong Kong Polytechnic University

(Conducted in English)

Abstract:

Through Central Procurement Organizations (CPOs), large firms with multiple divisions have begun adopting a center-led sourcing approach that allows firms to centralize strategic sourcing activities, while permitting decentralized execution by divisions, allowing the firm to leverage large purchase volumes with vendors. This new center-led procurement environment has brought a new decision requirement: How can a CPO select vendors for each division's requirements to minimize the firm's total procurement cost and simultaneously develop a fair and alignment-inducing mechanism to allocate the costs (and savings) of company-wide procurement to the divisions? Past research and current practice have not addressed this linkage between vendor selection and cost allocation in multi-division firms. This work models this sourcing and procurement cost allocation (SPC) problem facing CPOs of large firms as a mixed-integer optimization problem. This model is flexible and can incorporate several commonly used fair cost allocation rules. We show that the SPC problem is NP-hard. Therefore, to support practical decision making in this context, we develop a tailored solution approach for the SPC problem. Our approach enhances the base model by adding strong valid inequalities. We tested our model and its enhancements in an extensive numerical study, solving over 150 instances. Results reveal that (a) the practice of selecting vendors first and setting transfer prices next could cause large deficits for the CPO, (b) the CPO can ensure fair cost allocation at modest cost with our model, and (c) the proposed tailored approach is effective (< 4 minutes, on average) in solving a variety of instances.

Keywords: Procurement, Cost allocation, Applied optimization, Polyhedral methods

Bio:

Fang Fang is an Assistant Professor of Operations Management in the College of Business & Economics at California State University, LA. She holds a Ph.D. in Operations Management from the University of Miami. She researches managerial problems to support decision-making and to generate actionable insights with a focus on procurement management and OM-Marketing interface.

Please email to anne-ly.wong@polyu.edu.hk for enquiries.

All are welcome!