

Location: Krannert Center 124

Date/Time: August 30, 2019, 9:00 – 10:00 am

Host: Sustainability Research and Teaching Committee

Speaker: L. Beril Toktay, Brady Family Chair in Management
Faculty Director, Ray C. Anderson Center for Sustainable Business, Georgia Tech

Title: A Perspective on Sustainable Operations

Abstract: Dr. Toktay will talk about the range of opportunities for our community to define a comprehensive research and teaching agenda in sustainable operations. I will combine this overview with a recent publication titled “Truthful Mechanisms for Medical Surplus Allocation.” In this paper, we analyze a resource allocation problem faced by Medical Surplus Recovery Organizations (MSROs) that recover medical surplus products to fulfill the needs of underserved healthcare facilities in developing countries. Due to the uncertain, uncontrollable supply and limited information about recipient needs, delivering the right product to the right recipient in MSRO supply chains is particularly challenging. The objective of this study is to identify strategies to improve MSROs' value provision capability. In particular, we propose a mechanism design approach, and determine which recipient to serve at each shipping opportunity based on recipients' reported preference rankings of different products. We find that when MSRO inventory information is shared with recipients, the only truthful mechanism is random selection among recipients, which defeats the purpose of eliciting information. Consequently, we propose two operational strategies to improve MSROs' value provision: i) not sharing MSRO inventory information with recipients; and ii) withholding information regarding other recipients. We characterize the set of truthful mechanisms under each setting, and show that eliminating inventory and competitor information provision both improve MSROs' value provision. Further, we investigate the value of cardinal mechanisms where recipients report their valuations. We show that in our setting, eliciting valuations has no value added beyond eliciting rankings under a wide class of implementable mechanisms. Finally, we present a calibrated numerical study based on historical data from a partner MSRO, and show that a strategy consisting of a ranking-based mechanism in conjunction with eliminating inventory and competitor information can significantly improve MSROs' value provision.

Management Fall Seminar Series 2019

Speaker Bio: Beril Toktay is Professor of Operations Management, Brady Family Chairholder and ADVANCE Professor. Her primary research areas are sustainable operations and supply chain management. Professor Toktay's research has been funded by several National Science



Foundation grants and has received distinctions such as the 2010 Brady Family Award for Faculty Research Excellence and the MSOM Society's 2015 *Management Science* Best Paper in Operations Management Award. Her research articles have appeared in *Management Science*, *M&SOM*, *Operations Research*, *Production and Operations Management* and *Industrial Ecology*. She became a Distinguished Fell of the MSOM Society in 2017.

Professor Toktay has taught Supply Chain Management courses at the PhD, MBA, and Executive Education levels as well as Operations Management and Operations Research courses at the PhD level. She has developed cases and pedagogical material for MBA and Executive Education audiences and co-curricular educational initiatives at the undergraduate level. She currently teaches Business Strategies for Sustainability in MBA and Executive Education programs. She's a recipient of the 2016 Ernest Scheller Jr. Award for Service Excellence and the Georgia Tech 2015 Women of Distinction Award.

Professor Toktay served as Associate Editor for *M&SOM* (2007-2018), *POM* (2009-2013), and *Management Science* (2011-2017), and Area Editor (Environment, Energy and Sustainability) for *Operations Research* (2012-2018). She co-edited the *M&SOM Special Issue on the Environment*. She was the President of the MSOM Society and VP of Finance of the POM Society. At Georgia Tech, she serves as the Scheller College of Business ADVANCE Professor, a role that is focused on supporting the advancement of women and underrepresented minorities in academia. She is the founding Faculty Director of the Ray C. Anderson Center for Sustainable Business and the co-architect and Executive Co-Director of Georgia Tech's Serve.Learn.Sustain Quality Enhancement Plan.