Abstract:
Classical operations management models usually assume knowing all the information. However, in practice, some of the model information is typically uncertain. We consider three types of uncertainty for model information, namely parameter uncertainty, distributional uncertainty, and structural uncertainty. We study several well-studied operations management problems, such as the risk-averse newsvendor problem, reliable supply chain design problem, and the pricing newsvendor problem. Different types of uncertainty in these problems are addressed using different data-driven or robust methods, including operational statistics, distributionally robust optimization, and statistical learning. Our theoretical and numerical analyses show the favorable properties and advantages of these methods. Other than using statistics in optimization, we also discuss how optimization can be used to replace statistical procedures with an application in learning forecast preferences.

Bio:
Prof. Shen is a Chancellor’s Professor at the University of California, Berkeley. Prof. Shen earned his Ph.D. from Northwestern University, with an emphasis on logistics optimization and supply chain management. He is a recipient of the NSF CAREER award (2003) and the Inaugural Chuck ReVelle Rising Star Award, Society of Locational Analysis (SOLA), INFORMS (2008). Prof. Shen has published articles on logistics system optimization, supply chain design and management, and service systems management. He is also associate editors numerous journals. He is co-author of a text entitled Fundamentals of Supply Chain Theory. Prof. Shen has consulted extensively with industry, including many logistics providers and companies that focus on logistics and supply chain optimization.  
  
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