Data-driven robust optimization and behavioral approach in inventory management

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Demand uncertainty is one of the main challenges in supply chains. Optimizing inventory to maximize profit without knowing the demand has never been an easy task for decision-makers in practice. The inventory decisions will be even more complex when the demand is highly uncertain without knowing the distribution. We will conduct a comprehensive study of the data-driven robust optimization (DDRO) approach, theoretically, empirically, and behaviourally to tackle this problem. In theory, we will develop a new DDRO approach. In collaboration with companies, we will analyze the empirical data carrying out the new approach. From the behavioral perspective, we will validate and evaluate the DDRO solution and other AI solutions (e.g., obtained from reinforcement learning) to support human decision-makers.