Newsvendor Models and Biases under Ambiguity

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Abstract

In this study, we model the classical newsvendor ordering preferences under ambiguity. The extant literature on normative models in the newsvendor setting assumes decision-making under risk, where decision-maker has exact knowledge of the probabilities associated with the outcomes. In several business situations, the demand distribution is often incomplete or unknown. This results in decision-making under ambiguous situations. Decision theory recognizes the difference between exact probabilities and more realistic ambiguous probabilities. In his seminal paper, Scarf (1958) develops a max-min approach for the newsvendor with incomplete demand information. In the Scarf model, the newsvendor is assumed to be risk-neutral and ambiguity averse. In the recent experimental literature, it has been observed that the newsvendor behavior is not consistent with the Scarf model, and exhibits pull-to- center bias and other biases. This motivates our research to develop quantitative models under ambiguity to describe the observed biases in the literature.

Keywords:
Ambiguity, newsvendor, decision-theory, risk, biases

Biographies

Peeyush Mehta is a professor of Operations Management at the Indian Institute of Management Calcutta since 2012. During 2005 – 2011, he was a faculty in the Department of Industrial & Management Engineering at the Indian Institute of Technology Kanpur. He obtained his doctoral degree from the Indian Institute of Management Ahmedabad. He worked as a Post-Doctoral research fellow at the Nanyang Technological University, Singapore. Peeyush's research interests are in the areas of operations strategy, supply chain coordination, supply contracts, manufacturing competitiveness, and game theory applications in operations. His research has appeared in international journals such as European Journal of Operational Research, International Journal of Production Economics, Computers and Operations Research, International Journal of Production Research.

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