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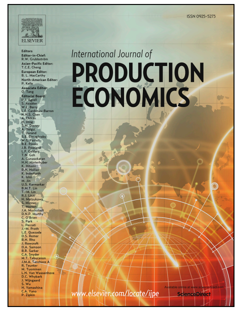

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Sourcing under Overconfident Buyer and Suppliers

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Abstract

In supply chains the buyer and its suppliers are often overconfident in situations where they face demand uncertainties. In this paper we study the impact of such overconfidence bias on the buyer's supply-base design strategy. With overconfidence bias, the buyer and suppliers perceive lower demand variability as compared with reality. Characterizing the buyer's optimal reserved capacity and optimal number of suppliers in the supply base, we find a threshold policy for impact of the buyer's overconfidence bias. We also find that the suppliers' overconfidence bias decreases the buyer's reserved capacity and number of suppliers in the supply base.

Keywords: overconfidence; capacity reservation; bidding; asymmetric capacity information

1. Introduction

It is often observed that humans tend to be overly confident about the accuracy of their beliefs in estimating random outcomes. In other words, they tend to believe that their estimates of the expected outcome in an uncertain environment are more precise than the outcome that is theoretically inferred (Moore and Healy, 2008; and Ren et al. 2017). Hence, overconfidence about uncertain outcomes is one of the important cognitive biases that is currently being studied in Operations Management (OM) research (Li et al., 2016). While previous research has studied the impact of overconfidence on firms' stocking decisions, there is little research on the impact of this behavioural bias on the sourcing decisions in supply chains.

In the context of a supply chain, various players at different levels make decisions under demand uncertainties. These decisions typically depend on the confidence levels of the players about the uncertain demand. There are cases where the buyers/suppliers in a supply chain make OM decisions with overconfidence bias. For example, while performing capacity planning under demand uncertainty, a manufacturing firm decides its capacity based on some internal estimate of the range of the demand. But the estimated demand range turns out to