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Pricing and Horizontal Information Sharing in a Supply Chain with Capacity Constraint

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This paper aims to explore manufacturers horizontal information sharing strategy under competition. The model framework is based on a two-echelon supply chain composed of one upstream supplier and two downstream manufacturers with asymmetric capacity constraint. Analysis of the model establishes manufacturers' information sharing strategies under different conditions and shows how supplier's pricing decision can shape manufacturers' information sharing incentives.

Key words : Supply chain; Information sharing; Nash equilibrium; Capacity constraint

1. Introduction

In the supply chain literature on vertical information sharing in the presence of downstream competition, the general conclusion is that information sharing by downstream competing manufacturers will harm themselves but benefits the upstream supplier. Thus, downstream manufacturers have no incentives to share information with the upstream supplier (Li [12] and Zhang [20]). The present study focuses only on horizontal information sharing among downstream manufacturers and aims to explore its interaction effect on different players in the supply chain.

Intuitively, the expected profit of a firm should increase when the information visibility to the supply chain is high. Many studies on operations management focus on the value of vertical information sharing. Examples of these works are Lee et al. [10], Aviv and Federgruen [1], Cachon and Fisher [2], and Gavirneni et al. [7]. The findings of this considerable research show that vertical information sharing results mainly in improved inventory allocation, low safety stock and shortage costs, fast and low-cost order processing. Theoretical research on information sharing in an oligopoly was pioneered by Novshek and Sonnenschein

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