Inventory Sharing under Service Quality Competition

by

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Online Session in Blackboard*: Research Seminar by Dr Xiaomeng GUO

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(Conducted in English)

Abstract:
In many markets with demand uncertainties, competing firms may share inventories for common product components that they use to offer consumers services. This paper examines how the competitors' sharing of product inventory affects their inventory and service-quality decisions. We develop a game-theoretical game in which two retailers offer the same core product but compete for customers by offering bundled services with the product. The consumer's purchase process is subject to some stochastic uncertainties that can potentially lead to no purchase. When a retailer runs out of stock of the product, it may replenish its inventory directly from the supplier, or/and request the leftover inventory from the competitor if they have entered into an inventory-sharing contract beforehand. We find that with inventory-sharing contract the retailers' service level decreases in the transfer price when inventory is exogenously given and is non-monotone in the transfer price when inventory is an endogenous decision. Moreover, the service level can be higher or lower than that without inventory-sharing contract, which indicates that whether inventory sharing will soften or intensify the service competition depends on the transfer price. We also find that the retailers' optimal inventory levels will increase in the transfer price of the inventory-sharing contract and can be higher or lower than that without the inventory-sharing contract. Furthermore, in equilibrium with symmetric inventories, inventory sharing may make both retailers worse off for any transfer price when the shipping cost for transferring inventory from one retailer to the other is high.

Bio:
Xiaomeng Guo is an Assistant Professor at Department of Logistics and Maritime Study, Hong Kong Polytechnic University. She received her bachelor degree in Mathematics and Physics from Tsinghua University and her Ph.D. degree in Operations Management from Washington University in St. Louis. Her research interests include supply chain management, operations and marketing interface, and behavioral operations. Her research work has been published in Journal of Marketing Research and Manufacturing & Service Operations Management.

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All PolyU staff and students are welcome!