Session 4: Advances in Retail Operations

Chair: Nevin Mutlu

Somayeh Torkaman (Eindhoven University of Technology) - From return to exchange: the value of an omni-channel journey

Authors: Somayeh Torkaman, Sarah Gelper, Nevin Mutlu, Tom Van Woensel

This study examines how retailers can convert returns into exchanges by exploiting their omnichannel capabilities. We do so in the context of a fast-fashion retailer that runs a traditional store channel alongside an online channel with pick-up-in-store and return-to-store options. Using a quasi-experimental approach, we quantify the value of omnichannel interactions -- store interactions for online purchases, and online interactions for store purchases. Specifically, we study whether omnichannel interactions make consumers more likely to exchange a returned product (and keep it), thus generating revenue for the retailer. We find that a store visit in the return journey of an online purchase has a positive effect on the exchange probability, keep probability, and revenue. This effect is particularly strong for return-to-store interactions compared to pick-up-in-store interactions. Notably, we do not find similar effects of online channel interactions in the return journey of store purchases, providing evidence of asymmetric channel effects. Our findings thus underscore the importance of the return-to-store omnichannel capability for online shoppers to find the right product and, consequently, for retailers to turn returns into exchanges.

Yeqing Zhou (Eindhoven University of Technology) - The value of flexibility from opaque selling

Authors: Adam N. Elmachtoub, David D. Yao, Yeqing Zhou

We study an emerging concept in online retail called opaque product, referring to a product where some secondary attribute (color) is not revealed to the customer until after purchase. Opaque products can be used as a source of flexibility to reduce inventory costs. We consider a setting where an online retailer sells multiple products and in addition offers a k-opaque option where customers select k products, from which the seller allocates one to the customer. Our paper studies how the degree of opacity, which includes k and the fraction of consumers who purchase opaque products, impacts the system in terms of inventory cost savings. We show that a limited amount of flexibility translates into significant cost savings. Moreover, the cost saving from a minimal degree of opacity is on the same order as the fully flexible case.

Paul Buijs (University of Groningen) - How Does Vendor-Managed Inventory Improve Supply Chain Performance? Insights Into the Role of Additional Inventory

Authors: Roel Post, Paul Buijs, Jaap Wieringa, Hans Wortmann & Jan Fransoo

Despite having been around for many years, vendor-managed inventory (VMI) is still not as widespread as might be expected based on its theoretical contributions. The exact details of the mechanisms through which VMI is successful, and their interaction in actual retail contexts, are unclear. Hence retailers are often not able to deploy VMI strategies effectively. Especially for products with limited shelf life, VMI is less common, and its effects and mechanisms are not well understood. We examine two distinct mechanisms through which VMI can improve demand fulfillment in supply chains: (1) by enabling fundamental operational improvements, for instance due to information sharing; and (2) by utilizing economies of scale resulting from additional inventories in the supply chain. We show empirically that both mechanisms are present, and provide a detailed explanation of their effect by making use of

transaction data from a corporate-wide VMI implementation by a large European grocery retailer. Our analysis shows that suppliers make distinct choices regarding which of the two mechanisms they deploy. Specifically, larger fundamental operational improvements are achieved for less perishable products, products with larger demand variance and private- label products. For products with less challenging inventory restrictions, suppliers prioritize the economies of scale resulting from the opportunity to hold more inventory in a setting with VMI.