

## Introduction of The Special Issue on *Analytics and Operations of Online Retailing*

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Global retail e-commerce sales reached \$4.28 trillion in 2020. This made up 18% of the total retail sales worldwide (www.emarketer.com). In 2024, the revenues of e-retailing are projected to grow to \$6.39 trillion, which will be equivalent to 21.8% of the total retail sales worldwide. Online retailing becomes an important industry to study because of the strong growth in sales. This special issue on ***Analytics and Operations of Online Retailing*** features a collection of nine interesting and novel articles. We summarize these articles as follows.

In [1], Aravind Govindarajan, Amitabh Sinha, and Joline Uichanco consider an omnichannel retailer with a network of physical stores and online fulfillment centers facing both in-store and online demands. The retailer needs to decide how much inventory to keep at each location at the start of a selling horizon, and which locations with available inventory to fulfill each online order from during the horizon. The authors develop a fast and scalable inventory heuristic, which can directly inform dynamic fulfillment decisions that guide online demand fulfillment from stores.

In [2], Daniel Schubert, Heinrich Kuhn, and Andreas Holzapfel study the problem of joint order picking and vehicle routing for same-day deliveries in omnichannel retail. They develop an algorithm and show that it can significantly reduce cost compared to that of the standard retail practice.

In [3], Vishal Bansal and Debjit Roy integrate storage and order picking processes in a warehouse for multiline e-commerce order fulfillment. They develop an analytical modeling framework for integrated analysis of the upstream shuttle-based storage-and-retrieval system and the downstream pick system networks. They analyze the resulting semi-open queuing network of the integrated system and provide a threshold on the maximum number of allowable orders and number of aisles beyond which the improvement in average throughput time of the integrated system is marginal.

In [4], Xia Xie, Peng Hu, Jing Yu, and Bin Dai study the impact of capacity on supplier's distribution channel selection in facing a retail platform. They show that moderate capacity can simultaneously benefit the supplier, the platform, and the consumers, creating a win-win-win outcome.

In [5], Arda Yenipazarli studies a strategic decision of a first-party vendor on a marketplace platform on whether to transition to a third-party seller on the platform. The author proposes a model of competition between two brand manufacturers whose products in the same category are vertically differentiated on a quality (or performance) attribute and where a cost is incurred for providing higher quality. The paper investigates the impact of product attributes on the transition of a first-party vendor to a third-party seller on the platform and provides insights on pricing and selling mechanisms for brand executives.

In [6], Bernhard von Mutius and Arnd Huchzermeier study the problem of optimizing category selection for mobile and print promotions using a data set from a leading German retailer. They show that there is a difference in planning for these two promotions, and that the current marketing practice can sometimes backfire.

In [7], Lingli Wu and Shiming Deng study fit-revelation sampling strategies (e.g., free samples, product trials, virtual fitting rooms, etc.) that could resolve consumer uncertainty regarding the fitness of a product. They show that fit-revelation sampling is important for market-differentiation.

In [8], Zihao Zhang, Liuyi Ling, and Feng Yang study a novel selling strategy for airlines, called “flight crowdfunding”, in which the airline will cancel the flight if the desired threshold is not reached. They show that crowdfunding can improve the airline’s profit, and also increase social welfare by reducing greenhouse emissions.

In [9], Ting Zhang and Tsan-Ming Choi study how sales tax affect retailer’s multi-channel (online-offline) strategy and social welfare. Their analysis provides insights on how the government should develop sales tax policies; in particular, these policies should ideally take into account both channel type and product category.

## References

- [1] Joint inventory and fulfillment decisions for omnichannel retail networks
- [2] Same-day deliveries in omnichannel retail: Integrated order picking and vehicle routing with vehicle-site dependencies
- [3] Stochastic modeling of multiline orders in integrated storage-order picking system
- [4] Impact of capacity on the supplier’s distribution channel selection in facing a retail platform
- [5] The marketplace dilemma: Selling to the marketplace vs. selling on the marketplace
- [6] Customer-centric category selection for mobile and print promotions in loyalty reward programs
- [7] Competitive fit-revelation sampling and mixed pricing strategy
- [8] Pricing strategy and campaign design in flight crowdfunding: A creative way to sell flight tickets
- [9] Optimal consumer sales tax policies for online-offline retail operations with consumer returns