

Dynamic Inventory Allocation for Fashion Apparel Rentals and Sales

There is a growing trend towards renting rather than permanent ownership of various product categories such as designer clothes and accessories. A major driver of this trend in the apparel industry is the variety seeking behavior of fashion-conscious customers.

Although the industry started with pure renters that are just renting their products at a fraction of the retail price, there are now many apparel retailers that are simultaneously renting and selling their product line. In particular, there are retailers that are primarily known as renters and are selling on the side and those that are primarily sellers but are renting on the side.

These retailers that offer the same product for sales and rentals need to effectively manage their inventory. It is important to note that once a unit is sold, the firm forgoes potentially recurring rental revenues from that unit during the remaining part of the season. Therefore, it is critical for a retailer to dynamically decide how much of its inventory to allocate for sales and rentals over time.

In their paper, “Optimal Dynamic Allocation of Rental and Sales Inventory for Fashion Apparel Products,” Mehmet Sekip Altug from George Mason University and Oben Ceryan from City, University of London, first develop a consumer choice model that determines the fraction of the market that chooses renting over purchasing. They characterize the optimal inventory allocation policy and explore how market characteristics and prices impact inventory allocation.

The authors then discuss the value of dynamic allocation and observe that the profit improvement can be substantial. In addition, they propose a simple and efficient heuristic policy. Finally, they extend their analysis to study the optimal allocation policies for various business models with different prioritization schemes between sales and rental demand.

Overall, the authors believe retailers that simultaneously rent and sell can increase their profits by doing a dynamic allocation of sales and rental inventory throughout the season. In an industry with notoriously slim margins, this approach can make a meaningful difference.

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