

A dynamic clustering approach to data-driven assortment personalization

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© 2017 INFORMS. We consider an online retailer facing heterogeneous customers with initially unknown product preferences. Customers are characterized by a diverse set of demographic and transactional attributes. The retailer can personalize the customers' assortment offerings based on available profile information to maximize cumulative revenue. To that end, the retailer must estimate customer preferences by observing transaction data. This, however, may require a considerable amount of data and time given the broad range of customer profiles and large number of products available. At the same time, the retailer can aggregate (pool) purchasing information among customers with similar product preferences to expedite the learning process. We propose a dynamic clustering policy that estimates customer preferences by adaptively adjusting customer segments (clusters of customers with similar preferences) as more transaction information becomes available. We test the proposed approach with a