

MARKETING COLLOQUIA

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PERSONALIZED VERSIONING: PRODUCT STRATEGIES CONSTRUCTED FROM EXPERIMENTS ON PANDORA

ABSTRACT:

The role of advertising as an "implicit price" has long been recognized by economists and marketers. However, the impact of personalizing implicit prices on firm profits and consumer welfare has not been studied. We first conduct a set of large-scale field experiments on Pandora by exogenously shifting the number of ads played per hour, i.e., the "ad load", for over seven million users over a period of 18 months. We first show that while it takes a long time (more than a year) for the effect of ad load on consumption to stabilize, the treatment effect on subscriptions reaches steady-state much faster (less than six months). We then use a state-of-the-art machine learning model to examine the heterogeneous treatment effects of firm's interventions on ad and subscription revenues. We next show that by reallocating ads across individuals, the firm can improve subscription profits by 7% without reducing total profits generated from advertising. To achieve the same subscription rate using a uniform ad-allocation policy, the firm would need to increase the number of ads served on the platform by more than 22%. Furthermore, the gains from personalization emerge quickly after implementation, as subscription behavior adapts to changing ad load relatively quickly. We also evaluate the welfare implications of personalizing implicit prices. Our results show that, on average, consumer welfare drops by 2% with the proposed personalization strategy, and the effect seems to be more pronounced for users that have a higher willingness to pay.