

When Serving Customers Hurts Drivers: Managing Supply-Side Engagement on On-Demand Transportation Platforms

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Abstract

On-demand transportation platforms create value by matching customer demands with drivers. However, certain orders can be undesirable to drivers, risking supply-side disengagement and platform sustainability. Using 84M orders across 19 Asian cities, we estimate a Mixture Hidden Markov Model to capture driver engagement dynamics and heterogeneity in responses to order characteristics, and identify two latent classes and three states. Low-engagement drivers (76.5%) respond primarily to earnings, while high-engagement drivers (23.5%) react to all factors: higher earnings, better destinations, and lower congestion boost upward transitions and active-state persistence. Nonmonetary effects can rival earnings and strengthen with tenure. To sustain long-term engagement, we propose three approaches: (1) internalizing detected undesirability into pricing, (2) providing state-class-specific compensation, and (3) strategically assigning remaining undesirable orders to low-sensitivity partners.

Track: Relationship Marketing