The Value of a Dollar: Optimizing Bidding Strategies for Suppliers

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How Advertising Works at Wayfair

Want to sell

Bids

Auction

Placement
Inside the Brains of Suppliers

Wayfair Sponsored Products Suppliers

Supplier A: I want to sell as much as I can...

- How much should I bid?
- What products should I advertise?
- What budget do I need to reach my goal?

Supplier B: I want to improve our brand awareness...
Problem Overview

How can we give visibility and insights to Wayfair suppliers to help them launch better advertising campaigns?

- SKUs
- Bids
- Budget
- Return on ads spend
- Conversion rate
- Clicks
- Cost per click
- Wayfair revenue
Our Proposed Approach

Multi-objective mixed-integer optimization model

We need to balance:
- Supplier
- Customer experience
- Wayfair profits
Methodology

1. Prediction

- Fit curves to model supplier metrics given bids
- Estimate the impact of bid adjustments on supplier KPIs

2. Optimization

- Set parameters based on business constraints and supplier objectives
- Find and justify recommended optimal bids

3. Validation

- Evaluate quality of recommended bids via simulation
- Provide insights to Wayfair and suppliers
Final Deliverables

**Supplier inputs**
- Target use case (intended goal)
- List of potential SKUs to advertise

**Wayfair-set parameters**
- KPI importance weighing learned from business insights and partners
- Tuned optimization model parameters

**Model outputs**
- Recommended optimal bid both on a class-level and a SKU-level
- Projected KPI outcomes
Simulated Results

What would likely happen if you followed our recommendation?

- On average pay +20% per click
- Clicks +90%
- Conversion rate +100%
- Return on Ad Spend +70%

- Revenue from ad clicks +120%
- Revenue from sales commission +250%
Project Impacts

Improve supplier **SATISFACTION** by helping launch better informed and goal-oriented advertising campaigns.

Reach a projected Wayfair monthly revenue increase of **$350K** in Area Rugs alone by promoting more competitive bids among suppliers and increasing product sales.

Provide a generalizable data-driven **FRAMEWORK** for supplier advertising recommendations.