

How To Survive Dynamic Pricing Competition in E-commerce

Challenge

Pricing on e-commerce platforms is highly challenging. Sellers typically **i)** rival against dozens of competitors, **ii)** decide on prices for thousands of products, and **iii)** face steadily changing market situations. In this project, we develop a data-driven approach to compute optimized pricing strategies for practical applications.

Use Case

- Our project partner *adanbo* sells used books on Amazon.
- Inventory of 80,000 distinct books (ISBN) with multiple items.

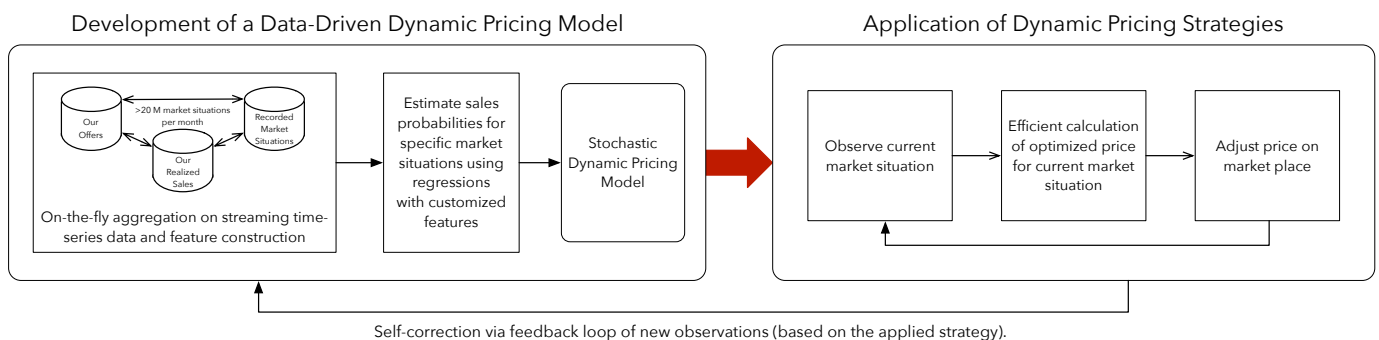
Objective

- Maximize expected discounted long-term profits.
- Find an optimized data-driven pricing strategy that is applicable for large inventories.

Constraints

- Multiple offer dimensions (price, quality, feedback, etc.) per competitor.
- Steadily changing market situations as competitors react & update offers.
- Include discounting & holding costs.

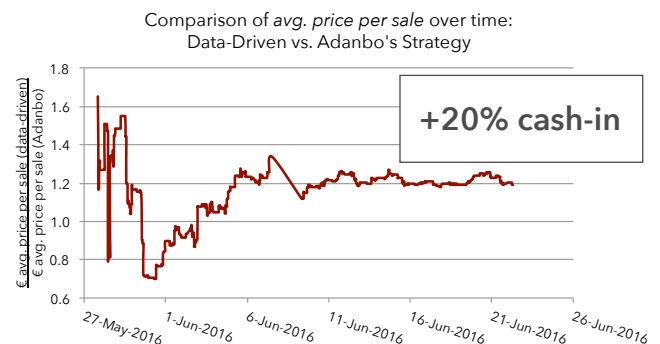
Process



Results

Our data-driven approach is currently applied by our project partner *adanbo* who is among the top 10 sellers in Germany and has more than 10 years of experience in the market. We compare our strategy with *adanbo*'s established rule-based strategy for two similar test groups of books.

	Group size	Sold	Avg. price per sale
adanbo's Strategy	3,535	22 %	4.34 EUR
Data-Driven Strategy	5,502	17 %	5.30 EUR



With our strategy applied, profits can be significantly increased. In addition, the model's discount factor allows to control the strategy's aggressiveness and in turn the speed of sales. This way, the seller is able to balance profits and revenues.