Leveraging Pricing Analytics in a Competitive E-Commerce Environment

Pricing Analytics, E-Commerce (Auto Industry)

August 2022

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Background

Our client with over $100 million in revenue annually, sells original and aftermarket parts for automotive enthusiasts. They cater to individuals with private garages and lifts, and of the components they sell, almost 60% are for Ford Mustang, Jeep, and Chevy vehicles. During the pandemic, many enthusiasts had more time to work on their vehicle projects, and demand jumped.

The Challenge

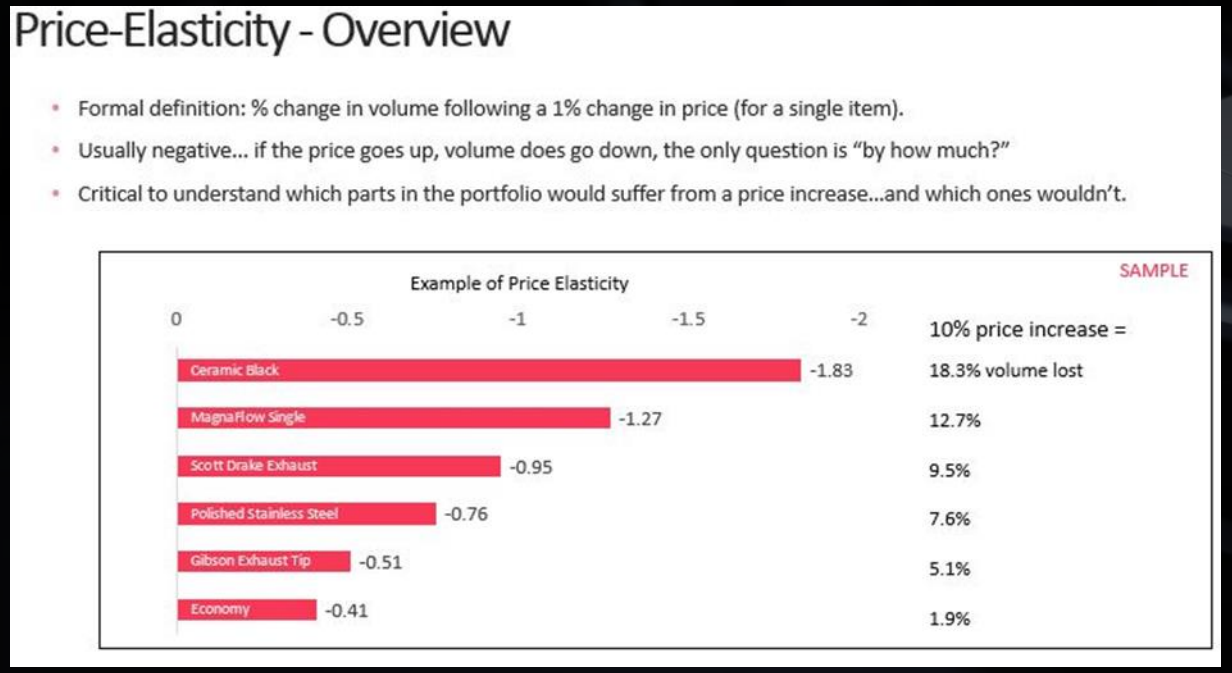
The client was concerned about the erosion of profits caused by inflation and supply chain disruptions and realized they needed to raise their prices. The Iris Pricing Solutions team provided guidance and support in addressing these challenges, providing a data-driven strategy that enabled them to raise prices confidently. Our goals included boosting revenue and improving their pricing strategy to capture even more revenue and get more out of their pricing to offset increased costs and growing inflation pressures.

Our approach involved:

- Identifying which products had low price sensitivity and could sustain a price increase to drive margins with minimal impact on website traffic.
- Developing a Pricing Tool to recommend product cross-sell/upsell opportunities that would increase the number and value of items in the online shopping cart.
- Identifying the effectiveness of promotions and discounts in driving web traffic, growing traffic frequency, and increasing the number and value of items in the online shopping cart.
- Extracting and analyzing Competitive Intelligence Pricing insights from our client's core competitors. This data scraping considered competitor websites, apps, and more.

Our Methodology

In developing a Price Optimization Algorithm for the client, the Iris Pricing Solutions team obtained transactional data at the customer purchase level to calculate price elasticities for each of their SKUs (Stock Keeping Units) as a proxy for price sensitivity.



When raising a price, an adverse reaction to the volume of sales indicates that the product is price sensitive. A price-sensitive product is an elastic one whereas those products whose sales are not sensitive to price alterations are inelastic. In developing the Price Optimization Algorithm, our team used statistical analysis and machine-learning models to examine existing prices, determining both price sensitivity and elasticity.

With this knowledge, we accurately predicted how pricing changes would affect the quantity of sales. Having identified which products have low price sensitivities, we then ran a shopping cart analysis that looked closely at transactional data to identify trends. Product relationships were identified that helped us create varying rule sets. This affinity analysis now guides the client when making decisions concerning bundling, promotions, upsells, and cross-sells.

We also conducted webscraping to examine competitor websites and gain an understanding of how competing products are priced. These competitor prices were then mapped to the client's own product list.
By generating price elasticities for over 41,000 products, we were able to simulate how sales would be affected by price alterations. These simulations identify the optimal price based on the aforementioned factors as well as certain constraints (i.e., the optimized price cannot be higher than the competitor's highest price).

Our Methodology

From there, business rules were used to fine tune the predictive model output to ensure successful implementation. These rules which adhered with the new pricing strategy, included three key considerations:

1. Competitor Pricing

When fine tuning the algorithm to consider competitor pricing, we ensured that the client's products were competitively priced in the marketplace. The competitive intelligence data gathered contained product pricing from five core competitors. Business rules were created based on this analysis to ensure that product price would never exceed the maximum price offered by these competitors. This competitor pricing rule was then built into the algorithm as a constraint and applied automatically.

2. Psychological Pricing

Psychological pricing acknowledges that consumers are subconsciously influenced by price thresholds and that small price modifications add up when dealing with over 41,000 SKUs. Accordingly, we devised a series of psychological pricing rules that round prices to an optimal number. These rules create a pricing structure that communicates value to an end customer, capturing maximum revenue and avoiding leaving money on the table.

3. MAP (Minimum Advertised Price) Restrictions

Historically, our client did not change prices on MAP restricted products and all retailers in the same aftermarket parts market matched prices on MAP restricted products. Therefore, we excluded price increase recommendations in our pricing strategy on MAP restricted products (which accounted for 25% of the client's product).

Psychological Pricing Rules

- **Prices over $140**
  - **IF the last dollar digit is less than 3:** change to 0.00 and subtract -$0.01
    - Example: IF $142.50 THEN output is $139.99
  - **ELSE IF the last dollar digit is greater than 3:** round up to $.99
    - Example: IF $147.50. THEN output is $147.99
- **Prices less than $140 but greater than $50**
  - Round up to $.99
    - Example: IF $57.35 THEN output is $57.99
- **Prices less than $50 but greater than $1**
  - **IF the last cent digit is less than 3:** round last cent digit to zero and subtract -$0.01
    - Example: IF $42.22 THEN output is $42.19
  - **ELSE IF the last cent digit is greater than 3:** round up to $.09
    - Example: IF $22.50 THEN output is $22.59
- **Prices less than $1.00**
  - Round last cent digit up to $0.09
    - Example: IF $0.84 THEN output is $0.89

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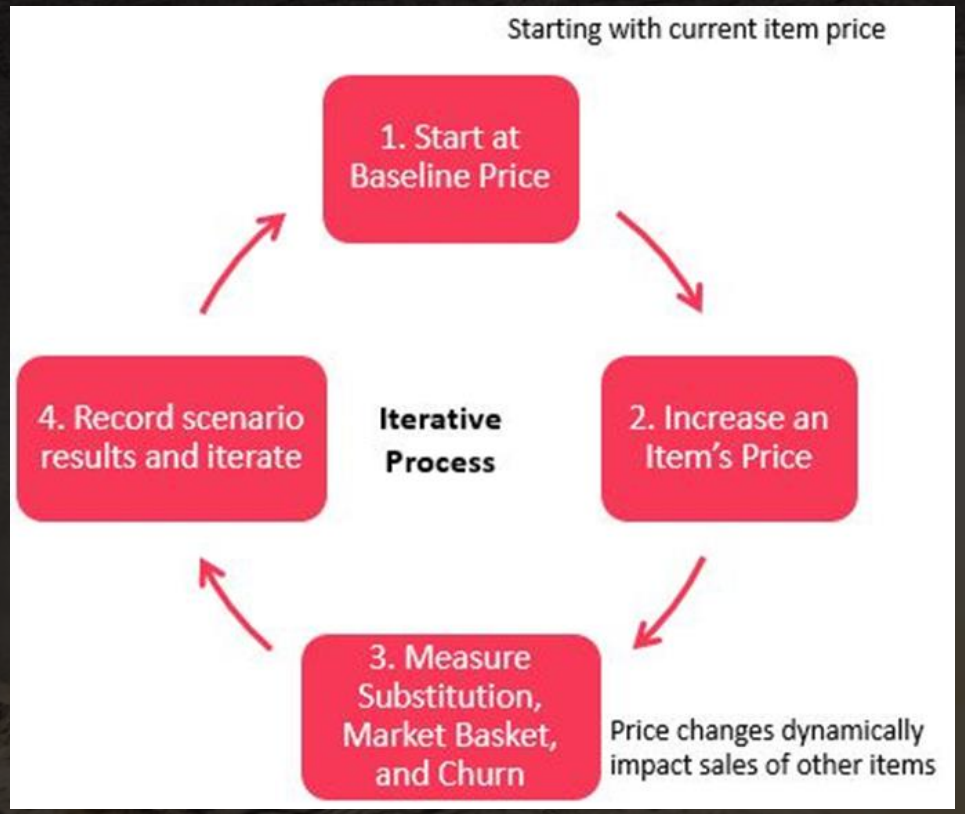
Results

Within this price optimization process we developed a computationally exhaustive approach to determine the best combination of product price increases which maximize revenue; minimize traffic loss; and consider business constraints, substitution effect, shopping cart effect, customer churn, and pricing psychology.



Based on this research, data and analysis, the Iris Pricing Solutions team delivered five pricing tools to the client. These tools can be refreshed on a quarterly basis to optimize prices in a climate where inflation is a growing concern. Receiving data on price sensitivity each quarter increases the client's confidence in raising prices on the right products.

1. Price Optimization Algorithm

Built-in Predictive Modeling and Optimization Engines optimize portfolio prices. This algorithm factors in:

- Price Elasticities
- Shopping Cart Analysis
- Seasonality
- Competitive Intelligence
- Psychological Pricing

2. Data-Driven Website Recommendation System - Shopping Cart Analysis

Uses Machine Learning algorithms to create data-driven product recommendations intended to increase average customer spend through shopping cart size.

3. Discount Effectiveness

Scores the effectiveness of historical discounting and provides product-level discounting recommendations.

- Each product is flagged with an actionable recommendation regarding future discounting rules

4. Black Friday / Cyber Monday Performance Profile

Our team analyzed historical Black Friday / Cyber Monday product-level performances to support pricing strategies and provide guidance around paid versus organic promotions, as well as high and low performing products.

5. Optimal Free Shipping Threshold Analysis

This analysis leverages trends in customer order behavior to recommend a new minimum shipping threshold. This analysis is designed to increase the average customer spend on the website and capture additional revenue opportunities going forward.

What's the Iris Pricing Solutions Difference?

Iris Pricing Solutions is experienced in understanding the unique challenges associated with pricing in a competitive ecommerce environment. Our team uses focused, customized research methods to develop strategies that leverage data to achieve pricing goals. We use research and data-driven strategies to help ecommerce organizations optimize pricing strategies and remain competitive.

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