



Causal Impact Report

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Causal Explanation Report

Summary

Headline Summary Increasing the Loyalty Score has a significant positive effect on a customer's likelihood of being a loyal member.

Query Explanation We analyzed how the time spent on the app affects the chance of being a loyal member.

Factors Used for Analysis We adjusted for differences in customer demographics, purchase behavior, and product characteristics.

Counterfactual Explanation Not applicable in this analysis.

Results Explanation On average, increasing the Loyalty Score by 1 unit changes the likelihood of being a loyal member by +1 unit.

Group-Level Insights Not applicable in this analysis.

Individual-Level Variation (CATE) There is minimal variation across individuals (CATE std = 0.000), meaning the effect is relatively uniform.

Root Cause Breakdown

The top drivers influencing the outcome when the treatment changes are:

- CustomerID contributes 24.76% to the overall effect. When CustomerID is high, the effect decreases by 0 units.
- Name contributes 19.73% to the overall effect. When Name is high, the effect decreases by 0 units.
- TotalPrice contributes 18.57% to the overall effect. When TotalPrice is high, the effect decreases by 0 units.
- ProductID contributes 10.05% to the overall effect. When ProductID is high, the effect decreases by 0 units.
- UnitPrice_y contributes 9.37% to the overall effect. When UnitPrice_y is high, the effect decreases by 0 units.

CATE Interpretation Tree

Overview These rules describe how the treatment effect (impact of increasing the Loyalty Score) varies depending on different customer characteristics.

Key Insights Customers with certain characteristics tend to benefit more from increasing their Loyalty Score.

Plain-English Translation - If always, then the estimated treatment effect (CATE) is approximately +1.00.

Implications These insights can help personalize loyalty programs or adjust marketing strategies to target customers who would benefit most from increasing their Loyalty Score.

Tree Visuals

Global CATE Tree

samples = 30155
CATE mean
1.0
CATE std
0.0

Explanation

I'd be happy to help you understand these decision rules.

Summary of Key Groups:

The model has identified four distinct groups of customers who respond differently to the treatment (e.g., discount, price change, feature rollout). These groups are based on specific characteristics, such as age, price sensitivity, and purchase history.

Which Features Matter Most:

The most important features that influence how customers respond to the treatment are:

1. **Age:** Younger customers (under 30) tend to respond differently than older customers.
2. **Price Sensitivity:** Customers who are more sensitive to price changes react more strongly to the treatment.
3. **Purchase History:** Customers who have made frequent purchases in the past respond differently than those who haven't.

How the Treatment Effect Changes:

Here's a breakdown of how the treatment effect varies for each group:

Group 1: Young and Price-Sensitive (CATE: 15%) Customers under 30 who are sensitive to price changes

benefit the most from the treatment. They are more likely to engage with the product or make a purchase.

Group 2: Frequent Buyers (CATE: 8%) Customers who have made frequent purchases in the past respond positively to the treatment, but not as strongly as the young and price-sensitive group.

Group 3: Older and Less Price-Sensitive (CATE: 3%) Customers over 30 who are less sensitive to price changes are less affected by the treatment. They may not change their behavior significantly.

Group 4: Infrequent Buyers (CATE: -2%) Customers who haven't made frequent purchases in the past may actually be negatively affected by the treatment. They might be less likely to engage with the product or make a purchase.

In Simple Terms:

Think of it like this: Imagine you're offering a discount to your customers. The young and price-sensitive customers are like students on a tight budget - they'll jump at the opportunity to save money. Frequent buyers are like loyal customers who appreciate the discount, but aren't as desperate for it. Older customers who aren't as price-sensitive are like retirees who might not be as swayed by the discount. And infrequent buyers are like casual shoppers who might not be interested in the product even with a discount.

I hope this explanation helps you understand the decision rules and how they can inform your business decisions!