Expedia Group - Pricing Analytics Case Study

Background

The Pricing Strategy team secured a 2M$ incremental budget for Q1'25 to offer discount to customers on targeted segments for the hotel line of business, objective is to maximize booking value.

The team short-listed the following dimensions for the optimization: hotel super region, device and hotel star rating.

Task

You've been asked to provide a recommendation on how to allocate this budget between the 3 segments.

We would like you to analyse the data in the Excel spreadsheet and create a 15- minute presentation. To include:

1. Expected impact and recommended allocation.
2. Both quantitative and qualitative arguments to support your recommendation.

The presentation will be followed by questions from the audience, you can add an unlimited number of slides to your deck in appendix and refer to those during the Q/A session.

Data dictionary:

Spend	Pricing discount offered to customers on a given date, super region, device and star rating bucket (USD)
NBV A	Total booking value generated on a given date, super region, device and star rating bucket on pricing test group A (USD)
NBV B	Total booking value generated on a given date, super region, device and star rating bucket on pricing test group B (USD)
Date	Date on which metrics are reported on (daily data)
Hotel Super region	Location of the hotel booked. NORAM = North America / LATAM = South America and Central America / APAC : Asia & Pacific / EMEA : Europe and Middle-East
Device	Device (Mobile or desktop) on which hotel was booked
StarRating	Star rating category of the hotel booked. "Low" can be considered as "budget" while "High" might be considered as "luxury"

Additional info:

-   Pricing team measure performance of our discounting programs with a continuous holdout group on 30% of the traffic on which no discount is offered ("group A")
-   Over Q4 the team gradually increase spend across the board by ~10%

Hints:

-   Start with an exploratory data analysis and expose most striking facts you can extract from the raw data. Be proactive on data cleaning
-   Can you define a KPI to measure incrementality (in $) driven by pricing?
-   Can you define a KPI to measure spend efficiency?
-   Can you think about an econometric notion linking price & demand? How could you adapt this notion to characterize the response of our customers to the 10% spend increase across Q4?
-   How would you draw (qualitatively) the relationship between spend and incrementality?
-   Don't forget to provide an estimated impact for your recommendation. A high level (but based on solid assumptions) estimate is better than nothing!