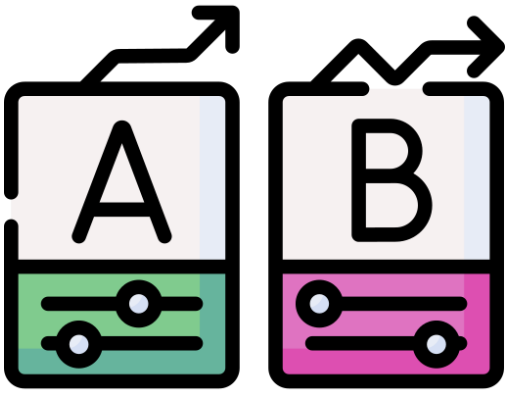
Empowering User Experience - Optimizing Product Recommendations through AB Testing



Project Background

The project aimed to optimize the e-commerce landing page to increase the user conversion rate, i.e., the proportion of users deciding to purchase the company's product. We conducted an A/B test to compare the performance of the new and old landing page versions to determine whether to fully adopt the new page, continue with the old page, or extend the testing period for decision-making.

Project Benefits

Through this A/B test, we achieved significant outcomes:

- User Experience Enhancement: We worked collaboratively with peers and under the guidance of our professor to rapidly design and execute high-quality split tests. Through data-driven design, we successfully optimized the user interface, improving the user experience.
- Increase in User Conversion Rate: We conducted a series of A/B test experiments to validate the impact of UI improvements on user preferences, resulting in a 12 basis point increase in the product usage rate.
- Accurate Launch Probability Assessment: We developed and fine-tuned a sophisticated Logistic Regression model to assess the probability of successfully launching the UI changes. Leveraging various user-specific and historical engagement factors, we made accurate predictions.
- Data-Driven Decision-Making: By interpreting model results, we provided in-depth customer insights, enabling data-driven decision-making for product development and marketing strategies. This facilitated strategic discussions on the UI change launch.

Project Progress

The project's progress included key steps:

1. **Probability-Based Approach:**

- This approach focuses on calculating the probability of an individual receiving the new page or the old page and assessing the likelihood of each scenario.
- It does not involve hypothesis testing but rather provides a probabilistic perspective on user interactions with the new and old pages.

2. **A/B Test Approach:**
    - In the A/B test approach, we set up a hypothesis to test whether the new page results in better conversion rates compared to the old page.
    - We simulate user groups, analyze their conversions, and calculate the p-value to determine the statistical significance of our findings.
    - Additionally, we may use an alternative approach to validate our results and decide whether to reject the null hypothesis based on the p-value.
3. **Regression Approach:**
    - The regression approach explores two possible outcomes: whether the new page is better or not.
    - It goes beyond simple A/B testing by incorporating geographic location as a variable to assess if a specific country has a significant impact on conversion rates.

    - Regression analysis allows us to identify potential factors influencing user behavior and conversion, providing a more comprehensive view of the data.

Each of these approaches offers a distinct perspective on evaluating the effectiveness of the new page, with the probability-based approach focusing on likelihood, the A/B test approach emphasizing statistical significance, and the regression approach delving into potential influencing factors. Depending on the specific goals and available data, one or a combination of these approaches may be chosen to draw meaningful conclusions.

Project Highlights and Challenges

Project highlights and challenges encompassed:

- Holistic Analysis: Our project employed a holistic approach to assess the impact of a new web page on user conversion rates. We combined probability-based analysis, A/B testing, and regression modeling to gain a comprehensive understanding of user behavior.
- A/B Testing Rigor: Our A/B testing approach was rigorous and followed industry best practices. We formulated clear hypotheses, simulated user groups, and calculated p-values to determine the statistical significance of our findings.

- Data-Driven Decision-Making: By interpreting regression results, we provided data-driven insights that empowered product development and marketing teams to make informed decisions regarding UI changes and user engagement strategies.
- Result-Oriented Approach: We adopted a result-oriented approach, demonstrated by our significant improvements in product usage rate and operational efficiency, showcasing the impact of data science on business outcomes.

Solutions

In this project, we implemented the following solutions:

- Improved user experience through UI enhancements.
- Conducted multiple rounds of A/B testing to validate the impact of improvements.
- Utilized Logistic Regression modeling to assess the probability of successfully launching UI changes.
- Enabled data-driven decision-making to ensure alignment with business goals and user preferences.

Retrospective Summary

In this e-commerce landing page A/B test, we successfully optimized the user interface, enhanced the user experience, and increased the user conversion rate, contributing positively to the company's revenue growth. The data-driven approach and collaborative teamwork were instrumental in achieving these results.