Evaluation Plan for A/B Testing a 50% Discount Offer on Subscription Screen

Overview

This document outlines the plan for conducting an A/B test to evaluate the impact of a 50% discount offer displayed on the subscription screen of our app. The goal is to determine whether this discount increases the percentage of users purchasing a subscription. The plan includes defining hypotheses, selecting user groups, choosing metrics, calculating the sample size, and determining the test duration. Additionally, it provides success criteria and potential actions based on the test results.

Step 1: Define the Hypothesis

Null Hypothesis (H0):
Information about a 50% discount on the subscription screen will not change the percentage of users purchasing the subscription (it will remain at 17%).

Alternative Hypothesis (H1):
Information about a 50% discount on the subscription screen will increase the percentage of users purchasing the subscription (it will be higher than 17%).

Step 2: Select Users for the Test

Users to Include in the Test:

- New users who installed the app during the test period.
- Users who navigated to the subscription screen after onboarding.

Daily App Statistics:

- Approximately 2000 users install the app daily.
- Of these, 34% (about 680 users) navigate to the subscription screen.

Step 3: Choose Metrics

Primary Metric:

- **Percentage of Users Purchasing the Subscription:** The main metric to assess the effectiveness of the change.

Additional Metrics:

- **Conversion Rate on the Subscription Screen:** The percentage of users who made a purchase after seeing the modified subscription screen. This helps in analyzing user behavior in detail.
- **Time Spent on the Subscription Screen:** Provides additional insights into user engagement.
- **Number of Canceled Subscriptions:** Important for monitoring to assess if the change affects user loyalty negatively.

Step 4: Calculate Sample Size and Test Duration

Sample Size Calculation:

- **Significance Level (α):** 0.05 (5% chance of Type I error - false detection of an effect).
- **Power of the Test (1 - β):** 0.8 (80% chance of detecting a true effect).

Current and Target Rates:

- **Current Purchase Rate:** 17% (0.17).
- **Target Purchase Rate:** 20% (0.20).

With these assumptions, approximately **2418 users** are needed in each group (test and control), totaling **4836 users**.

Test Duration Calculation:

- Daily users reaching the subscription screen: **680**.
- To achieve the sample size of **4836**, the test should run for: 4836680≈7.1 days\frac{4836}{680} \approx 7.1 \text{ days}6804836≈7.1 days

Recommendation: Round up to **8 days** to ensure a sufficiently large sample.

Bonus Task: Conditions for Test Success

Success Criteria:

- **Statistical Significance:** A statistically significant increase in the percentage of users purchasing the subscription in the test group compared to the control group (p-value < 0.05).
- **No Negative Impact:** No adverse effects on additional metrics, such as the cancellation rate of subscriptions.

Actions Based on Results:

- **If the Test is Successful:** Implement the modified subscription screen for all users.
- **If the Test is Unsuccessful:** Consider alternative modifications, such as:

- Testing different content and graphics on the subscription screen.
- Adjusting subscription prices or adding other forms of promotion (e.g., free trial period).