Analysis: New Globox Gather Around Banner

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Summary

An A/B test was run from January 26, 2023, through February 6, 2023, to determine if a new banner on the Globox app had any impact on revenue increases. Two hypothesis tests were run. The z-test for conversion rates had a p-value of 0.0001, less than 5%. I recommend we reject the null hypothesis, in favor of the alternative hypothesis that there is a significant difference between the the Control Group and the Treatment Group. However, the T-test, for average amount spent, had a p-value of 0.9439 > than 5%, so I will not reject the null hypothesis, that the average amount spent is the same between the two groups in favor of the alternative that there exists a difference between the two groups.

Context

The Growth team decided to run an A/B test for products in the food and drink category as a new Gather Around banner at the top of the Globox app. The test was run for 12 days from January 26, 2023, through February 6, 2023.

Visitors are randomly assigned to either the control or test group when they visit the GloBox landing page. The Control Group does not see the banner, but the Test Group sees it.

We captured a dataset of 48,943, accounting for each time a visitor landed in the Globox app. Visitors were assigned a unique ID, and if a purchase was made, they were counted as “converted”. If they did not make a purchase, they were counted as a visitor.

Results

Data was pulled from the dataset with a SQL query returning:

- User ID
- User's country
- User's device (Android or iPhone)
- User's gender
- Test group
- If they converted (spent > $0), and how much they spent in total ($0+)

Results cont.

Query results were analyzed in Google Sheets.

We aggregated the raw data by counting total distinct number of visitors in each test group:

- ✓Group A has 955 visitors.
- ✓Group B has 1139 visitors.

We counted converted visitors in each test group:

- ✓ Group A has 24,342 converted visitors.
- ✓Group B has 24,600 converted visitors.

The average amount spent per group is:

- ✓Group A has $3.37 average amount spent.
- ✓Group B has $3.39 average amount spent.

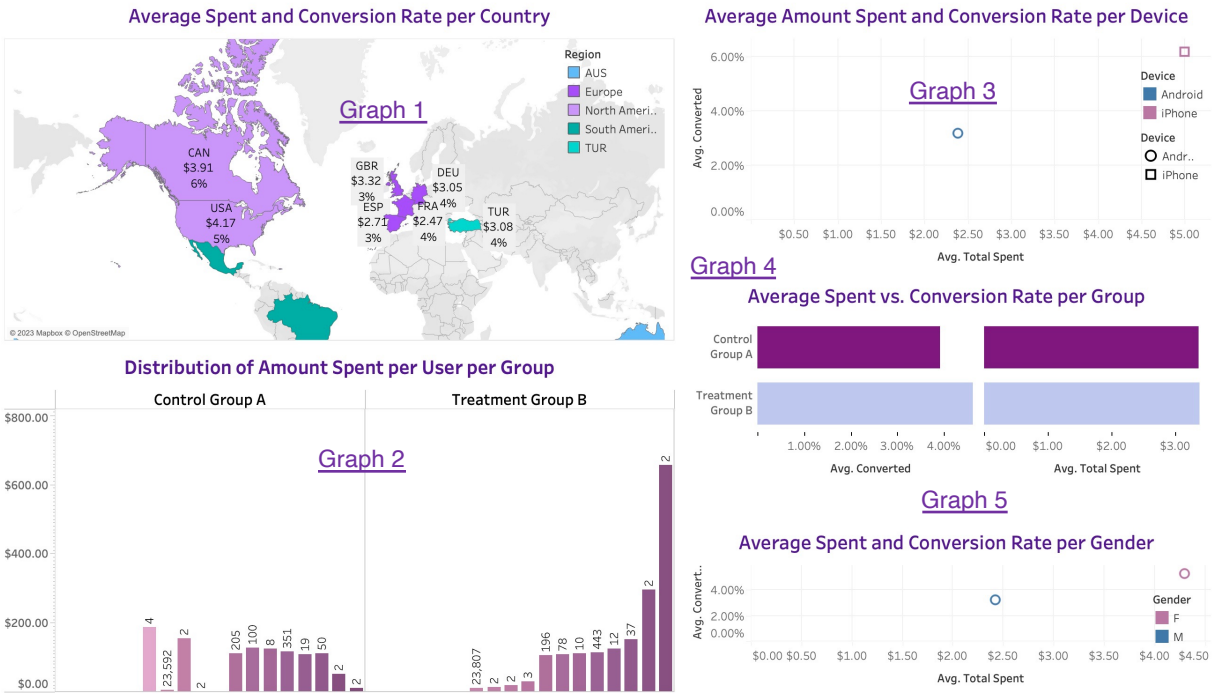
Two hypothesis tests were run:

- The z-test to determine conversion rate had a p-value of 0.0001, less than 5%.
  - ➢ For this statistic I recommend we reject the null hypothesis, in favor of the alternative hypothesis that there is a difference between the Control Group and the Treatment Group.

- However, the T-test, for average amount spent, had a p-value of 0.9439 > than 5%,
  - ➢ I will not reject the null hypothesis, that the average amount spent is the same between the two groups in favor of the alternative that there exists a difference between the two groups.

Conversion Rate vs. Average Amount Spent per Group

Results Dashboard



The above results dashboard can be accessed through the link in the appendix for greater detail.

Graph 1 above, shows average spent and average conversion rate per country. The USA and Canada had the highest conversion rates and average amount spent, respectively.

Graph 2 illustrates the distribution of amount spent per user, per group. The numbers at the top of the bar represent the number of users in each amount bin. There are significant outliers in Group B.

Graph 3 shows us the average amount spent, and the average conversion rate for Android versus iPhone users.

Graph 4 is a comparison of the average amount spent and the average conversion rate per group. The conversion rate for Treatment Group B is 4.63%, vs. 3.92% for the Control Group.

Graph 5 is the average spent and average conversion rate per gender. Females spent $4.30 versus males, who spent $2.43 on average.

Recommendation

Though we have a 95% confidence interval of 0.71%, for the conversion rate of the new Gather Around banner, I recommend iterating for a 30 more days. Because we also have a 95% confidence interval, that the average amount spent between the Control Group (existing banner), and the Treatment Group (new Gather Around banner), is only higher by $0.02.

My official recommendation is:
Test again

Appendix

Spreadsheet: https://docs.google.com/spreadsheets/d/1dvaMdhkAuYut3qLu5gdkozeuuTvAAvm6cwO9iNYhiuI/edit?usp=sharing

Tableau: **https://public.tableau.com/views/JP-Project1-Version1/conversion_rateavg_amt_spent?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link**

Note - 1st Query Code: (all the work was done on 1st query. A second query was done to get more precise numbers—see link to spreadsheet in Appendix)

1st Query:

```
SELECT SUM(COALESCE(a.spent, 0), a.uid, a.device, u.country,
                u.gender, g.group
FROM users.u
LEFT JOIN “groups” g
ON u.id
LEFT JOIN activity a
ON g.uid=a.uid
GROUP BY a.uid, a.device, u.country, u.gender, g.group;
```

2nd Query:

```
WITH cte AS (
        SELECT uid, "group", country, gender, groups.device,
        SUM(spent) AS total_spent
 FROM users
 LEFT JOIN groups
ON users.id=groups.uid
LEFT JOIN activity
USING(uid)
GROUP BY uid, country, gender, groups.device, "group"
            ), cte_2 AS
           (select uid, country, gender, device, "group",
           (COALESCE(total_spent, 0)) as total_spent,
       CASE
          WHEN total_spent is not null THEN 1
          else 0 end as converted
          from cte)
 select * from cte_2;
```