Applying Iterative Design Principles to a Live Product

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Step 1

Select KPIs

&

Evaluate Previous Multivariate Experiment Results

Select KPIs for Flyber Analyses

- For the data available, which KPI(s) best match Flyber's business model?

    1. The number of Flyber unique users per day → This will show if the reachability of Flyber increasing across time for different users.

    2. The number of rides per day → This KPI will show how many actual rides are started per day which has a direct impact to the revenue of Flyber.

- How would you calculate these KPI(s) using the available event data logs?

    1. **The number of Flyber unique users per day** can be calculated by counting the distinct UserID against Day from the event time.

Sheet 3

Day of Event Time	
October 5, 2019	15,903
October 6, 2019	27,428
October 7, 2019	27,060
October 8, 2019	27,377
October 9, 2019	27,168
October 10, 2019	27,268
October 11, 2019	27,323
October 12, 2019	13,816

2. **The number of rides per day** can be calculated by counting the number of records of the begin_ride event against Day from the event time.

Sheet 1

	Day of Event Time							
Event Type	October 5, 2019	October 6, 2019	October 7, 2019	October 8, 2019	October 9, 2019	October 10, 2019	October 11, 2019	October 12, 2019
begin_ride	54	95	116	98	77	87	107	43

Select KPIs for Flyber Analyses

- List other KPIs that might be important to Flyber but are not calculable based on available data

1. **Customer Acquisition Cost**
    - How much Flyber spend on acquiring customers who takes rides.
    - It can't be calculated because the dataset doesn't have total expenses on customer acquisition.
2. **Customer lifetime value**
    - The amount of revenue an average customer generates.
    - It can't be calculated because the dataset doesn't have the AVG value of a ride, AVG number of rides taken within a time or the customer retention period.

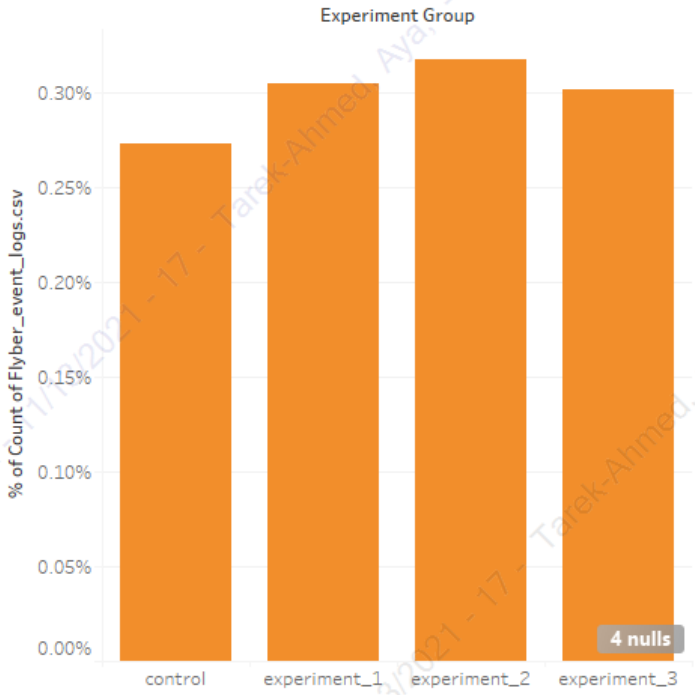
Describe the First Multivariate Experiment

- Describe the elements tested during the multivariate experiment. You can use the image below when referencing the tests

Review Multivariate Test Results: Visualization

- Provide a visual representation of the impact of the experiment on the conversion rate of users booking a flight (out of all users opening the app)

	Experiment Group			
Event Type	control	experiment_1	experiment_2	experiment_3
open				
begin_ride	0.27310%	0.30502%	0.31753%	0.30166%



To evaluate the results of the multivariate test:

1- we filter on Open & begin_ride event types and count the records in both events.
2- Add the Experiment group to the columns.
3- Edit table calculation and choose “Percent From” to get the % of booked flights from the total users who opened the app.

Review Multivariate Test Results: Visualization

The results show that Experiment_2 had the higher impact on the number of booked flights/rides out of all users opening the app with a percentage of 0.318%.

Review Multivariate Test Results: Significance Test

Determine if there was a significant difference between the experiments and control states.

- Explain how you would perform a t-test to determine if the experimental results had a greater impact on the booking conversion rate than the control state
- List the test results (p value) for each experiment compared to the control
- Using the statistical significance calculator of your choice, determine which experiments, if any, had a significant result at the 95% level. Include your calculations as part of your explanation
- Based on your statistical significance calculations, recommend if any of the experiments should be expanded

Review Multivariate Test Results: Significance Test

Test	Visitors (Open)	Conversions	P-Value	Significance
Control	56,390	154		
Experiment 1	56,390	172	0.1591	Not Significant
Experiment 2	56,688	180	0.0843	Not Significant
Experiment 3	56,687	171	0.1848	Not Significant

- The confidence is 95% and a two-sided hypothesis.
- The P-Value must be less than 0.025 for the test to be significant.
- Non of the experiments has a P-value less than 0.025
- Due to that, non of the experiments should be expanded.

Step 2

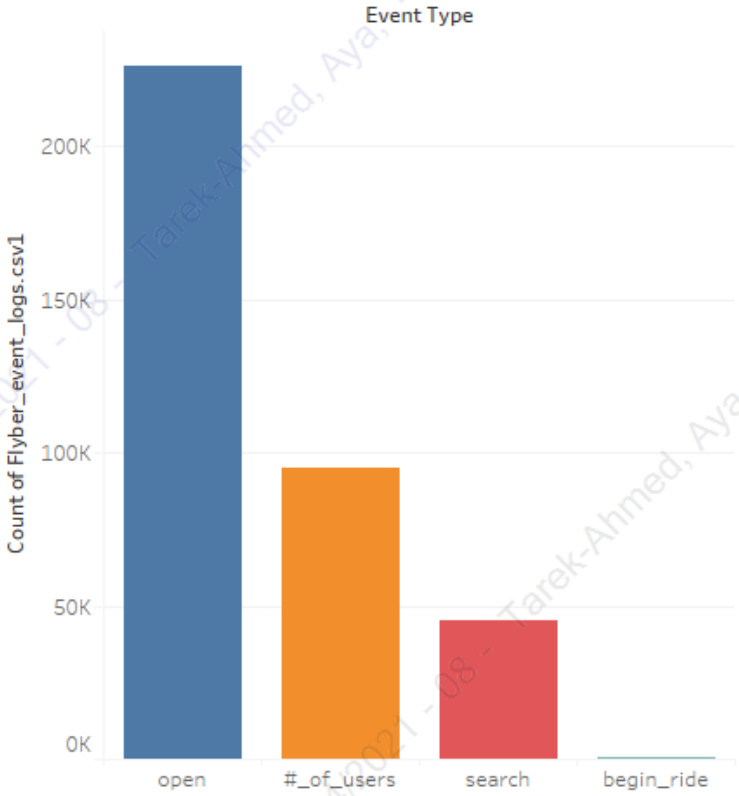
Funnel & Cohort Analyses

User Funnel

Identifying the different stages the user funnel

- Based on the event types in the data provided, list the 3 or more steps a user can take from opening the app to final booking of a ride
  - Open (open the app)
  - #_of_Users (selecting number of users in a ride)
  - Search (searching for a ride)
  - Begin_ride (Begin the ride)

- Provide a graph showing the funnel from step to step, including drop off rates.



Event Type	
open	
#_of_users	-58.10%
search	-51.97%
begin_ride	-98.51%

User Funnel

- Since the number of records = number of users at each event, so every user only went through the funnel once and No. of records can be used for calculating the drop-off.

Event Type	Count of Flyber_ event_logs.csv	Count of User Uuid
open	226,155	226,155
#_of_users	94,748	94,748
search	45,503	45,503
begin_ride	677	677

- Calculating the drop off rate between steps “percent difference”
- The highest drop off rate is between customers who search for a ride and actually begin the ride = -98.5%

User Segments

- Identify 2 demographic attributes present in the data that allow for segment analysis
- For each demographic attribute, provide the number of users in each segment group
  1. Age

Age	
18-29	57,364
30-39	38,356
40-49	95,168
50+	176,195

  2. User Neighborhood

User Neighborhood	
Bronx	10,802
Brooklyn	73,880
Manhattan	257,259
Queens	18,088
Staten Island	7,054

- For each demographic attribute, identify the segment group with the largest number of users
  1. Age → 50+ segment group has the largest no. of users.
  2. Neighborhood → Manhattan has the largest no. of users.

Segment Analysis of Funnel

Identify Opportunities for Improvement

- Perform a funnel analysis by segment for all identified demographic attributes and describe the results

1. Age:

	Age			
Event Type	18-29	30-39	40-49	50+
open				
#_of_users	-58.02%	-58.36%	-58.11%	-58.08%
search	-35.75%	-36.49%	-35.97%	-67.87%
begin_ride	-98.62%	-98.34%	-98.30%	-98.72%

The 50+ users segment has 32% higher drop off rate between #_of_users & search pages than other segments, which indicates that an improvement can be done to target 50+ users.
Maybe the search page experience is not clear enough for them.

2. Neighborhood:

	User Neighborhood				
Event Type	Bronx	Brooklyn	Manhattan	Queens	Staten Island
open					
#_of_users	-58.79%	-58.19%	-58.03%	-58.58%	-57.80%
search	-51.85%	-52.24%	-51.94%	-51.23%	-52.67%
begin_ride	-98.27%	-98.52%	-98.52%	-98.63%	-98.39%

Looking at the data, all segments groups have similar drop off rates between all pages. This indicates that Neighborhood doesn't play role whether user book a ride or not.

Segment Analysis of Funnel

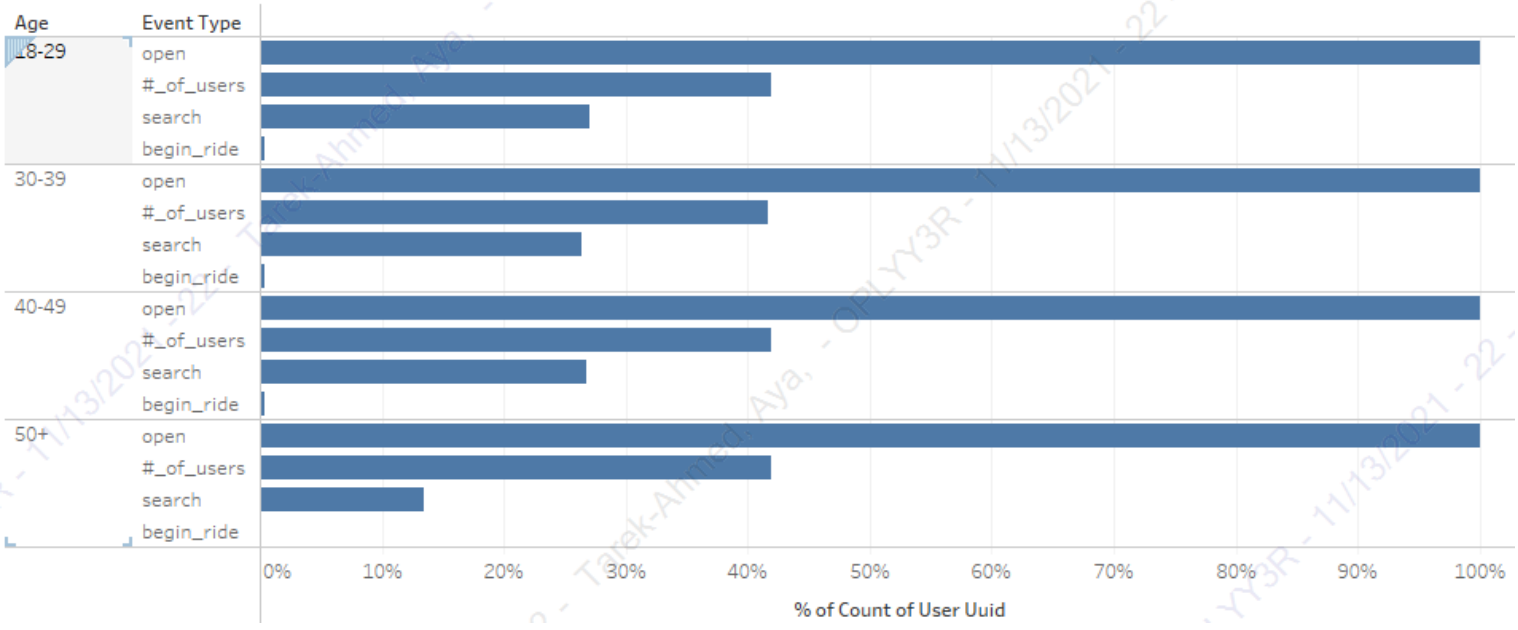
Identify Opportunities for Improvement

- If underperformance for a segment in an attribute is identified, add a visual showing the average funnel conversion by segment group for that demographic

Underperformance is found in “Age” group of 50+, between the #_of_users and the search page, affecting the conversion rate in the search step and the begin_ride step as well.

Sheet 5

	Age			
Event Type	18-29	30-39	40-49	50+
open	100.00%	100.00%	100.00%	100.00%
#_of_users	41.98%	41.64%	41.89%	41.92%
search	26.97%	26.45%	26.82%	13.47%
begin_ride	0.37%	0.44%	0.46%	0.17%



Step 3

Hypothesis & Next Steps

Review Qualitative Data

- Read user interviews to understand “why” any funnel under-performance seen in Step 2 might occur
- List your hypothesis for what customer need is being under-served.

The most common customer needs is to enhance Flyber APP experience by:

- Adding a feature to save the favorite destinations or addresses, which saves time for users in a hurry trying to book a flight, comparing to Uber and other apps.
- Work on font size and the booking instructions.
- Adding a feature to book a ride using voice commands to save customers more time.

- Provide 3 or more quotes as evidence for this hypothesis

1- I usually use Uber because it remembers my addressees and has all my favorite places saved.

2- I call up our local pilot,...,He knows where I tend to be and where I want to go.

3- The first few times I tried booking, the instructions were too small.

4-I tell my phone to call a cab to go to a certain address (I’m always on the phone, so I just voice commands with my phone most of the time).

Suggested Features & Experimentation Plan

- Share your hypothesis using the following format:

We believe that 67% of the 50+ user group drop off between #_of_users and search pages and that only 0.17% of them begin a ride after opening the app Because Flyber app is a bit hard to use and users waste a lot of time booking a flight And that by enhancing the booking experience for Users group 50+ we will see higher conversion rate of beginning rides and lower funnel drop off rate.

By enhancing the search & ride booking experience we expect a 20% conversion rate increase in the search page and a 5% conversion rate increase in the begin_ride page in addition to a 35% decrease in the drop off rates in the search page.

- Suggest 2 or more features that would match your hypothesis and determine a plan for multivariate testing, including describing the control and experimental conditions

  1- Saving users' favorite destinations/addresses.

  2- Enable booking a flight using voice commands.

Multivariate Testing	New Features
Control	- Choose destination from the map. - Booking a flight enabled only using a button.
Experiment 1	- Choose destination from the favorites list. - Booking a flight enabled only using a button.
Experiment 2	- Choose destination from the map. - Enable booking a flight using voice commands.
Experiment 3	- Choose destination from the favorites list. - Enable booking a flight using voice commands.

Suggested Features & Experimentation Plan

- Determine who should be exposed to the experimental changes

  - Existing Flyber users from the age group 50+

- List any additional metrics that would be helpful to collect from your suggested features

Metrics to collect:

1- Time spent on each page by a user.

2- Which test state is seen by a user Id.

3- Which user actually use each feature.

4- Which users click begin a ride.

5- Funnel drop off rate on search and begin_ride pages.

6- Customer satisfaction/reviews for users who used both features.

Appendix

Raw Data

Additional Info

You could include supporting or additional information that can support your previous slides but isn’t necessary for every person to see that looks at your slides.