

Part 1 - (25 min preparing + 10 min discussing)

Question 1: Give us a few interesting insights (5-7) you could find from [this dataset](#). Please make a copy of the dataset and perform your analysis.

Note: Sharing screen is required. You can use Google, or any tools that help you.

Answer 1

Here are some interesting insights from the dataset:

1. Price Distribution:
 - The average price of listings is \$771,649, but this is likely skewed due to some extremely high values (max = \$6.38 billion).
 - Most prices are much lower, with the 75th percentile at \$82.09.
2. Top Categories by Listings:
 - The most popular categories (by total listings created) are:
 - Dresses & Skirts (Women's Clothes): 12,677 listings.
 - Tops (Women's Clothes): 11,262 listings.
 - Electronics & Gadgets - Others: 8,173 listings.
3. Most Expensive Categories:
 - The categories with the highest average prices include:
 - Women's Watches: \$27.8 million (extremely high due to likely outliers).
 - Board Games & Cards: \$7.4 million.
 - Others (Video Gaming): \$231,890.
4. Condition Distribution:
 - 55.3% of items are new, 44.0% are used, and only 0.7% are unspecified.
5. Hourly Listing Patterns:
 - Listings are most frequent between 6 AM and 9 AM UTC, peaking at 7 AM with 6,579 listings.
 - Listings drop significantly after 4 PM UTC, reaching a low at 9 PM UTC (359 listings).
6. Outliers in Prices:
 - There are extreme outliers in the **avg_price_usd** column (e.g., \$6.38 billion). Filtering these out would yield more realistic insights.

Part 2 - (25 min discussion)

Problem Statement

With the huge amount of listings uploaded to the Carousell marketplace every minute, listings are pushed down very fast in search ranking. Additionally, as sorting is heavily based on the freshness of the listing, the visibility of a listing decreases quickly in a short amount of time.

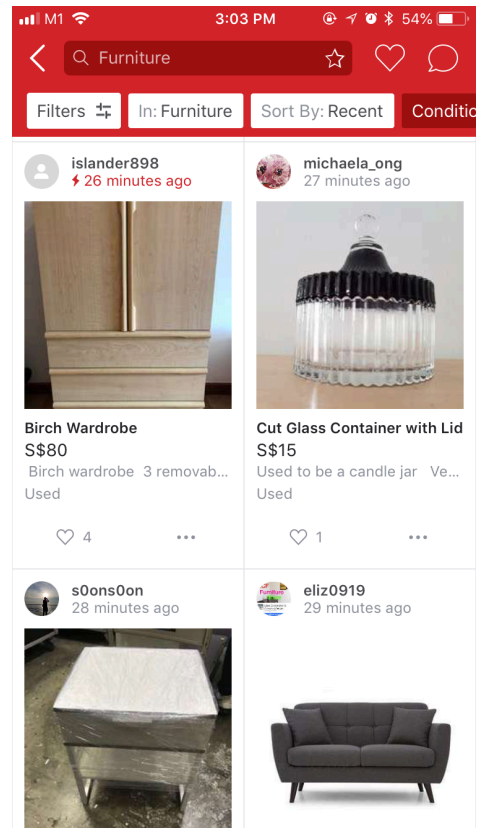
New Feature

The Product Manager (PM) would like to find a way to help sellers transact faster by increasing their listings' visibility in the marketplace.

He is proposing a feature that allows sellers to push up their existing listings (BUMP) once a day for 7 consecutive days.

(Trivia: Bump is a behavior in popular internet forums where users would post a 'bump' message to bring their thread to the top of the forum. Incidentally, it is an acronym for 'Bring Up My Post'.)

The idea is that the BUMPs would provide more visibility for the listing, and thus reduce the time taken to transact.



Question 2: Before building the feature, we want to validate the idea.

How would you know if the proposed feature could be helpful for sellers, assuming you can use historical app data about our listings, our listing impressions, and chats?

Answer 2

To determine whether the "BUMP" feature could be helpful for sellers, we can analyze historical app data to simulate and assess its potential impact:

Steps to Validate:

1. Analyze Historical Data:
 - Evaluate the relationship between listing visibility (impressions) and conversion rates (chats, purchases).
 - Study how the position or "freshness" of a listing correlates with the likelihood of generating transactions.
 - Examine whether older listings (low in search rankings) still attract interest or if their visibility diminishes entirely.
2. Simulate the Feature Using Historical Data:
 - Identify listings that could have benefited from a "BUMP" (e.g., listings with high interest initially but tapering off later).
 - Simulate "BUMP" behavior by temporarily re-ranking these listings and observing how visibility (impressions) and activity (chats) would have changed.
3. Segment Analysis:
 - Compare listings in highly competitive categories (e.g., Electronics, Fashion) to less competitive ones to understand if "BUMP" could be more effective in specific categories.
 - Analyze differences across price ranges to see if more expensive or cheaper items benefit differently.
4. Correlation Study:
 - Analyze whether higher visibility translates to faster transactions by tracking listing age, impressions, and chat data for historical transactions.

Experiment

The PM would like your input on how we can experiment with such a feature, to establish that this idea would really help sellers sell faster before rolling out the feature to the whole market.

Question 3: What can be the top 2 metrics to define the success of this feature? What is the appropriate statistical test you would recommend to understand the feature impact?

Answer 3

Top 2 Metrics:

1. Time to Transaction:
 - The average time taken for a listing to be sold or transacted after it is uploaded.
 - A reduction in time-to-transaction after using "BUMP" indicates success.
2. Increase in Listing Engagement:
 - Measure engagement metrics like:
 - Number of impressions a listing receives after being "BUMPED."
 - Number of chats initiated post-BUMP.

Statistical Test:

To evaluate the impact of the feature, conduct an A/B test:

- *Test Group:* Sellers whose listings are "BUMPED" once daily for 7 days.
- *Control Group:* Sellers without the "BUMP" feature.
- Compare key metrics (e.g., time to transaction, impressions, chats) between the two groups.

Statistical Test:

- Use a two-sample t-test or Mann-Whitney U test to compare metrics like "time to transaction" and "chats per listing."
- For proportions (e.g., percentage of listings transacted), use a chi-square test.

Recommendations

Suppose that the experiment was conducted and has a positive effect for the seller and helps them transact faster. Hence, we rolled it out as a paying product. However only 2% of them purchased bumps.

Question 4: How would you increase purchases of this new feature among sellers?

Answer

If only 2% of sellers are purchasing the "BUMP" feature, here are strategies to improve adoption:

1. Enhance Awareness and Communication:

- Highlight Success Stories: Show real data on how "BUMP" has helped sellers transact faster (e.g., testimonials, case studies).
- In-app Notifications: Use personalized messages to notify sellers when their listings are falling in visibility and suggest "BUMP" as a solution.
- Educational Content: Create videos or articles explaining how "BUMP" improves listing performance.

2. Pricing and Incentives:

- Offer Free Trials: Allow new users to try the "BUMP" feature for free for a limited number of listings to demonstrate its effectiveness.
- Introduce Discounts or Bundles: Provide discounts for purchasing multiple "BUMPs" at once.
- Gamify the Feature: Introduce loyalty programs where sellers earn rewards or points for purchasing "BUMPs."

3. Targeted Promotions:

- Identify Active Sellers: Focus marketing efforts on high-volume sellers or those in competitive categories who would benefit the most.
- Time-based Offers: Run promotions during high-traffic periods (e.g., festive seasons) to encourage feature use.

4. Optimize Feature Placement:

- Integrate Seamlessly: Add the "BUMP" option directly to the seller's dashboard or when they view their listing performance.
- Urgency Triggers: Use language like "Your listing is losing visibility! Use BUMP to stay on top."

By combining these strategies, adoption rates can be increased, leading to greater seller satisfaction and platform revenue.