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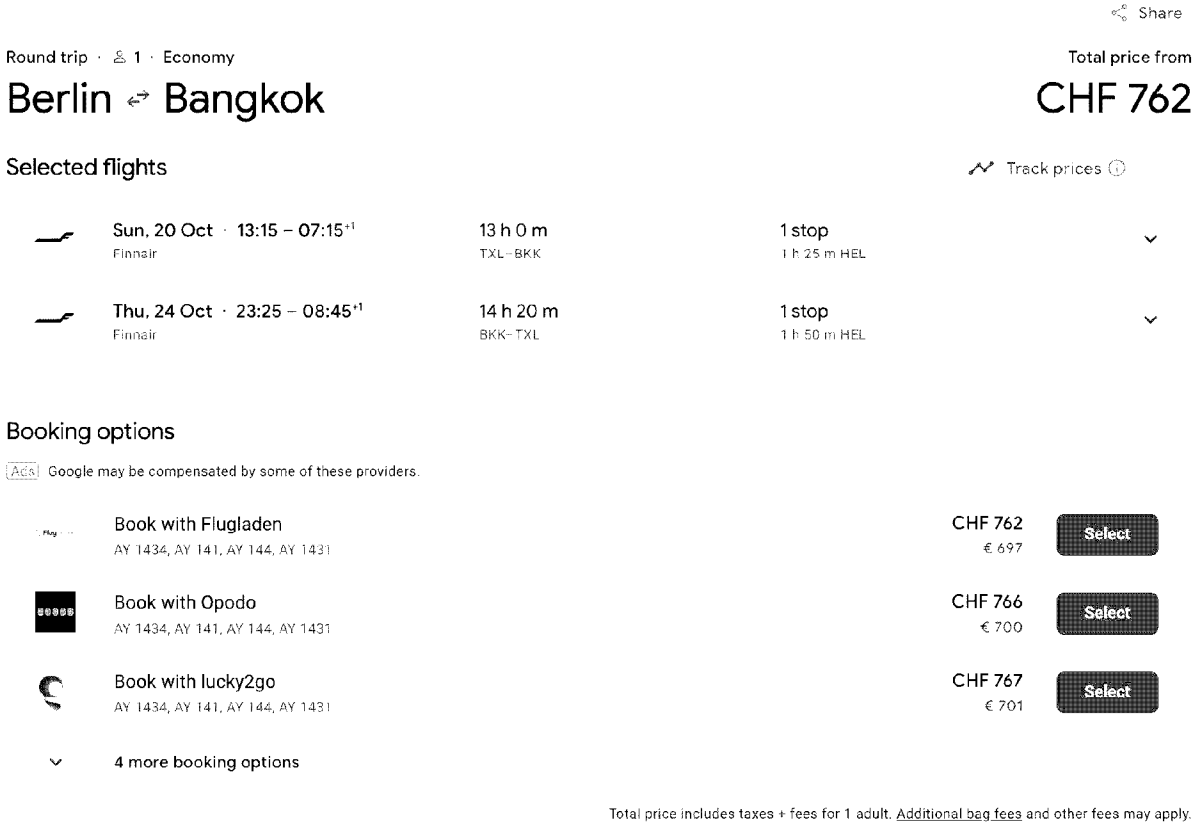
Enforcing Booking Link Diversity

Context

With the addition of numerous OTAs in multiple markets, who are willing to compete on price by offering small discounts, the airline links on the book page get pushed further and further down. This document discusses if and why this is a problem, and what we can do about it.

For the purpose of this document, we define **'link diversity'** as "showing a mix of carrier and OTA links by default (where both links exist) when users land on the booking page".

Why is it bad if airline links get pushed down?



In the above example, on desktop the airline link (Finnair) does not appear without expanding the list of booking links. On mobile, only the first booking link is displayed by default, so the airline link won't appear there either. This happens for more and more itineraries as we add more OTAs and they compete on price. This is potentially bad because:

EXHIBIT PSX00510

1. Not showing an airline link by default decreases the perceived legitimacy of the product, and therefore has a deleterious effect on user trust.
2. Many OTA groups own multiple OTA brands, and want them to be displayed for the same itinerary, [redacted] in many markets. This further exacerbates the problem.
3. Our past experience suggests that users have a preference for airline links. I.e. in past country launches, the airline link has gotten more clicks than an OTA link regardless of whether it is in the top position or not.

Substantiating the problem

One way to do this could be to conduct user research to check

- Whether users expect to see the airline link by default. Conversely, if users don't see an airline link, it reduces their trust in the product.
- Whether users prefer airline links. In a ceteris paribus comparison (same price, similar link quality, regardless of rank), would users rather click on an airline link than an OTA link? This will need to control for brand familiarity effects I.e. users clicking on an airline link more just because they're more familiar with the airline brand than the OTA brand. Note that this might also be checked using an experiment.

However, the short term effects of this problem can also be detected by running an experiment as described below, and seeing the impact on user clicks.

Experiment

In the long term, we want the link ranking algorithm to be smart, and to take into account additional factors such as click rate on the links, conversion rates of partners behind the links, etc. The algorithm should adapt to what the users are clicking on, and what kind of experience they are getting after clicking (using conversion rate as a proxy for 'experience').

In the short term, the proposal is to add a basic diversity criterion in the ranking algorithm. As an experiment, the conditions could be as follows:

For itineraries where we have > 3 links with both carriers and OTAs,

- If an airline link is not one of the 3 cheapest ranked solutions, then show the best airline link at position 3.
- Similarly, for symmetry, if an OTA link is not one of the 3 cheapest ranked solutions, then show the best OTA link at position 3.

Success metric

The success metric for such an experiment would be whether inserting the airline link at rank 3...

1. Increases the overall CTR of the book page vs control
2. Increases the overall conversion rate per session vs control

If one or both of the above metrics improve, we can conclude that this is a positive change for users.

Pitfalls

A potential pitfall of this approach is that it breaks the apparent price sorting of the booking links in the eyes of the user. The user might miss cheaper options than the airline link that are only visible when the links are expanded. This can be mitigated (though not completely eliminated) by having text such as: "3 more booking options from $350" on the expander.

Another pitfall is that such a condition will only solve this problem for desktop, not for mobile [redacted]

Experiment results (updated Nov 6, 2019)

Booking Clicks	Conversion-tracked booking Clicks	Conversions Same Day	Booking Clicks Per Booking Page	Booking Clicks Per Usage Sessions ratio	Conversion-tracked booking Clicks Per Usage	Conversion-tracked booking Clicks Per	Conversion-tracked booking clicks per
[redacted]							

Metrics snapshot
Rasta dashboard

The experiment resulted in [redacted] **increase in total booking clicks on desktop ([redacted] overall)**. CTR from the book page showed a similar increase. **Same day conversions were up by [redacted] on desktop and overall**. There was no significant change in metrics on mobile.

Conclusions

1. Elevating the airline link so that it is visible to users by default has a significant positive impact on both booking clicks and booking conversion, thus hinting towards increased user trust when they see the airline link.
2. This is further evidence (if any was needed) that most users on mobile devices are oblivious to anything that happens below the first link, and strengthens the case to show more links by default in the mobile UI.

The recommendation is to launch this diversity condition to 100%.

Additional thoughts / concerns

1. The Book page redesign project envisages increasing the number of visible booking options on both desktop and mobile. If and when that happens, this diversity condition should be revisited and either altered or removed.
2. There are concerns about this condition removing the incentive for carriers to improve their link quality. Right now we ask airlines for deep links, for Book on Google, and for conversion tracking all under the umbrella that it will impact their display order. While this change pretty much guarantees the third position to carrier links (if 3 or more OTA links are present and cheaper), the incentive still remains for carriers to improve their position beyond #3. Additionally, the situation remains unchanged in all other scenarios (e.g. where there are no OTA links, or where OTAs are not cheaper, etc). As illustrated by the metrics, the benefit to the user (and the impact on user behaviour) is substantial enough for us to make this change regardless of the slight hit to carrier incentives to improve link quality.

Results addendum (added 17 Dec 2019)

Distribution of clicks b/w different links (experiment vs control)

In the experiment (where the airline link is pulled up to the third position), the additional clicks are mostly on the 3rd (i.e. airline) link, slightly on the 2nd link. [redacted]

- Clicks on the 3rd link [redacted] when it is an airline link [redacted]
- Clicks on the 4th link (and likely 5th, 6th, etc) decrease substantially [redacted] (note: 4th link used to have more traffic than the 3rd link)
- Clicks on the 1st link decrease slightly [redacted]
- Clicks on the 2nd link increase slightly [redacted]

- Out of the [redacted] new clicks on the 3rd link, [redacted] are from links 1 & 2. The rest are either new (users who were dropping off when they didn't see the airline link, but are clicking now) or come from links ranked 4th or lower.

Additional conclusions

We seem to have two clear segments of users.

1. **Users who want the cheapest flight** (regardless of whether it is from an airline or OTA). These users click on the top two links (OTAs) in both control and experiment.
2. **Users who prefer to book with airlines** (probably due to a lack of trust in OTAs) regardless of small differences in price. These users only click when we promote the airline link, and seem to be a minority (they bring in the [redacted] additional clicks on the 3rd link in the experiment arm, compared to [redacted] clicks on the first two links).