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Paradox of Choice in Travel Bookings

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Booking travel is plagued with problems. While the quantity of information available to customers is arguably at an all-time high, the data is dispersed and is often presented in a way that is not conducive for decision making. The current options available to customers when booking travel online are platforms that induce high levels of cognitive load, drastically reducing both the user's quality of experience and ability to use the information available to make the best choice.

Decades of research in behavioural science and behavioural economics have found that users are acutely impacted by decision-making biases, which are amplified when placed under cognitive load. However, the conventional wisdom in travel bookings suggests that increasing the number of options available to the customer improves their experience, a trend seen on online booking platforms and high-end travel agents. We believe that better-designed choice architecture can greatly improve outcomes and user experiences when booking travel. By reducing the number of options, we can improve the quality of information we present to customers.

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1 Decision Making Under Load

To understand the mechanics behind the decision-making process, a substantial amount of literature exists in behavioural economics and behavioural science disciplines. Behavioural economics arose out of an attempt to improve the realism of the psychological assumptions underlying economic theory [1]. Since then, the literature has presented a number of fascinating results which are directly applicable to customers' decision process when booking travel.

Users often deviate from the classical assumptions of rational decision making, with high levels of risk-aversion, being impatient in the short run and using non-optimal indicators to inform their choices [2]. This effect is amplified when the consumer is put under cognitive load. In situations where consumers are faced with several options and a difficult optimisation problem, these internal biases likely lead to critically non-optimal outcomes.

A key result in the literature has come to be known as choice paralysis and the 'paradox of choice'. This is the idea that the larger the number of options presented to somebody, the less likely they are to make any decision at all [7]. Further, when presented with hard to differentiate options, consumers are likely to defer their choice [3]. This 'choice paralysis' phenomenon is present in a large mass of the literature, with some behavioural studies suggest that it is present in even seemingly simple decision problems.

When making decisions, particularly when there are probabilities or a large amount of information involved, several internal biases and heuristics augment the decision process and lead to non-optimal outcomes. Anchoring is an effect where a user creates or receives an initial, potentially arbitrary, value and then adjusts from it to make decisions [6, 5]. Users are unable to sufficiently deviate from these initial anchoring points, resulting in impaired decision making. Users may anchor from exogenous information provided to them, from prior knowledge or incomplete computation.

The 'law of less work' is the principle that users choose their actions to minimise the level of exertion or work. The level of cognitive demand that a user expects a task to have has a real and significant role in the decision-making process itself [8]. To circumvent this work, users implement heuristics, and simplifying strategies, that consistently fall short of optimal outcomes.

Further, users are myopic in their decision making - opting to make quick decisions that yields a quick reward [4]. If decision processing and load aversion cause users to make quick decisions based on a set of limited decision parameters, outcomes are likely to deviate from their optimal significantly.

2 Application in the Travel Sector

There appears to be consensus in the literature; when a user is faced with a task that is expected to be cognitively demanding, decision-making is severely negatively affected. In the travel industry, it is clear that the current systems which are supposed to provide their users with great outcomes result in an 'information overload', making the decision-making process harder rather than easier. In their attempt to provide more options to a wide demographic of users and stoke the 'love for variety' of the consumer, booking platforms provide an impossibly hard decision problem.

Travel booking sites compound this problem by increasing the difficulty of the decision-problem over a number of dimensions:

1. Number of choices

   The primary problem presented by booking platforms is the magnitude of choices available to customers. Presented in a hard-to-read list-style view, an increasing number of choices intensifies the cognitive load. This increases the chance of further biases impairing decision making, reducing quality of experience and leading to non-optimal outcomes.

   Presenting a consumer with a seemingly endless list of options may further their tendency to be short-sighted in their decision making. In an attempt to tackle the problem of processing the incredible number of options, users may be led to using non-optimal choice criteria - or simply be driven to choose the first option they see.

   Different customers have a wide range of varying choice criteria, decision processes and preferences. Travel platforms must be designed to provide the range of options necessary to present a varied range of options while minimising the decision-making complexity for the customer.

2. Choice criteria

   The decision problem of the user contains more than just the price of the hotel. Depending on the consumer's price sensitivity, other factors (for example, the proximity to a location or amenities available) play an increasingly significant role in the decision function.

   Current booking platforms' significance on the price in the discovery process induces the risk that anchoring effects may cause consumers to adapt their judgments to all the available information insufficiently. Further, booking platforms do a poor job of providing relevant supplementary information, aside from customer reviews and lists of amenities, which may play a significant role in the decision-making process.

3. Dispersion of information

   The information included in the decision-function is not currently easily available and processable by consumers. Dispersed information causes difficulty in assessing options. The focus on price on booking sites provides a risk of over-weighting the price within the decision function, ultimately reducing the consumer's utility.

Together, these factors present an opportunity to improve the outcome optimality and customers' experiences when they are booking travel. Augmenting the dimensions of choice the customers see through reducing the number of options but increasing additional and contextual information reduces the cognitive load on customers, allowing them to make better decisions. Leveraging technology, in particularly advancements in user interface design and artificial intelligence to predict the preferences of consumers from their behavioural signals, we can further improve the probability that the consumer sees the subset containing the most utility-maximising choices out of the set of all possible choices and provide the information in an easily parsable format.

References

[1] Colin F. Camerer and George Loewenstein. Behavioral economics: Past, present, future. *Advances in Behavioral Economics*, pages 3–51, 2011.

[2] Cary Deck and Salar Jahedi. The effect of cognitive load on economic decision making: A survey and new experiments. *European Economic Review*, 78: 97–119, 2015. ISSN 00142921. doi: 10.1016/j.euroecorev.2015.05.004. URL `http://dx.doi.org/10.1016/j.euroecorev.2015.05.004`.

[3] Siegfried Dewitte, Mario Pandelaere, Barbara Briers, and Luk Warlop. Cognitive Load has Negative After Effects on Consumer Decision Making. *SSRN Electronic Journal*, pages 1–22, 2011. ISSN 1556-5068. doi: 10.2139/ssrn.813684.

[4] John M. Hinson, Tina L. Jameson, and Paul Whitney. Impulsive Decision Making and Working Memory. *Journal of Experimental Psychology: Learning Memory and Cognition*, 29(2):298–306, 2003. ISSN 02787393. doi: 10.1037/0278-7393.29.2.298.

[5] Daniel Kahneman and Amos Tversky. Judgment under uncertainty: Heuristics and biases. *Judgment Under Uncertainty: Heuristics and Biases*, 185:1–92, 1987. ISSN 0021-9916. doi: 10.4324/9781912282562.

[6] Jörg Oechssler, Andreas Roider, and Patrick W. Schmitz. Cognitive abilities and behavioral biases. *Journal of Economic Behavior and Organization*, 72(1):147–152, 2009. ISSN 01672681. doi: 10.1016/j.jebo.2009.04.018.

[7] Barry Schwartz. *The paradox of choice : why more is less / Barry Schwartz.* HarperCollins, New York, 1st harper edition, 2005. ISBN 0060005696.

[8] Kool Wouter, Joseph McGuire, Zev Rosen, and Matthew Botvinick. Decision Making and the Avoidance of Cognitive Demand. *J Exp Psychol Gen*, 139(4):665–682, 2010. ISSN 03865991. doi: 10.2996/kmj/1138846322.

