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## **Choice Overload or Time Stress: What Determines Purchase Decisions for Airline Tickets?**

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## Abstract

Previous research has identified choice overload as a potential cause for purchase deferral. Researchers suggest that the decision difficulties and frustration consumers experience when processing significant amounts of information can lead to decision avoidance and have also found that, consistent with such explanation, that time constraints act as a moderator: approaching deadlines seems to amplify choice overload due to an increased cognitive burden. Identifying moderators of choice overload and discovering contexts in which choice overload occurs is a promising research direction and more importantly it is still unclear whether this phenomenon exists in real business contexts. With the present study, we address this gap and study the interaction between assortment size and time constraints in a purchase context dominated by uncertainty. We conducted two studies to investigate how number of options and time pressure influence purchase decisions. Past research in time effects vary in understanding of time pressure and focus on either real decision deadlines (physical time) or subjective feeling of pressure associated with time (sense of urgency or psychological time). We test both the moderating effect of physical time and psychological time and compare their impact.

In Study 1, we investigate the effect of number of choices and purchase deadlines (physical time limit) on consumers' purchase decisions using secondary data on consumers' purchase and search of airline tickets. We collected secondary data from a European online travel agency, an ideal context with large number of options and in which both deadlines and subjective feeling of time pressure can have influence on people's decisions. Our results are consistent with the presence of choice overload: we find a negative relationship between number of options and purchase probability. Due to nature and detail of the data, we are also able to exclude alternative explanations including option filtering as consumers go through the purchase funnel. However, our results suggest an alternative mechanism behind the choice-overload phenomenon. We then test for the potential moderating effect of time pressure: further away from departure we expect consumers to experience little if any time pressure leaving sufficient cognitive resources to process the available information as a result choice overload is less likely to impact purchase. In contrast we find that further away from departure the negative effect of having more options is stronger. This means that purchase deferral is more likely when consumers face greater options far from departure. Closer to departure, the negative impact of number of options is not as strong. These results suggest that it is likely that number of options, though negatively impacting purchase decision (i.e., leading to a postponed purchase) is not the result of choice overload but perhaps the result of other alternative psychological mechanisms. This mechanism is the temporal shift of choice preferences. While processing information of an activity in a near future, decision makers tend to use a lower level construal that is more concrete, detailed and includes "contextual and incidental features" (Trope and Liberman, 2003) of the activity. Decision makers prefer the desirability to the feasibility of a decision outcome when they are distant from the decision deadline, because decision makers are able to postpone their choice till they are closer to the decision deadline and therefore postpone thinking of the information that can be used to evaluate the feasibility of the decision, such as details, concrete aspects and context of the decision. When the decision deadline approaches, however, decision makers prefer feasibility to desirability. In the context of purchasing airline tickets online, desirability of a decision is finding an ideal option such as lowest price, most convenient departure / arrival time etc. Feasibility of the decision, however, is to have one airline ticket before planned departure date and avoid missing the travel

plan. The interaction between number of options and decision time limit (number of days till planned travel date) has a negative effect on purchase probabilities. This negative effect indicates that when purchase deadline is distant and there are numerous options, customers tend to construct a higher-level construal and are attracted by desirability of the decision and therefore prefer to defer choice and continue to search for the best option. While purchase deadlines are near or number of options decrease, customers form a lower-level construal, prefer feasibility of the decision and are more likely to make a purchase to avoid having no options or missing planned travel dates. The uncertainty regarding alternatives and recent price changes, seem to contribute to shifts to lower-level construal. We find also that consumers' subjective sense of urgency, or psychological time, has a greater impact on this shift than physical time and the number of options. Despite controls for heterogeneous personal characteristics that may influence people's psychological time pressure, these effects exist.

In Study 2, we conducted an experiment to further verify the effect of sense of urgency. We constructed a mock website of an online travel agency, providing either 6 or 12 options of flight tickets to choose from. We set up two planned travel dates (purchase deadlines) for participants: 7 days till departure and 30 days till departure. We randomly assign participants to each of these departure dates. In order to manipulate sense of urgency, we established four scenarios of scarcity: flight departure in 7 days; flight departure in 7 days with limited seats available; flight departure in 30 days; flight departure in 30 days with limited seats available. An icon of "3 seats left" was shown to participants in scenarios of scarcity for example a scenario of "flight departure in 7 days with limited seats". Participants' sense of urgency of making a purchase will be activated when customers observe this scarcity icon. These scenarios were randomly presented to participants. Participants were asked to make a decision of either "Confirm and Purchase Now" or "Cancel and Make Purchase Later" on last page of this mock website. 205 respondents show that in scenarios with same level of scarcity, average purchase rate is higher when purchase deadline is near (7 days till departure) than when deadline is distant away. However, both scenarios with scarcity have higher purchase rates than scenarios without scarcity. Our experimental results verify that while decision time limit moderates the effect of number of options on purchase decisions, perceptions of time stress play a greater role in changing behaviour.

Through this study we highlight that a sense of urgency or psychological time play a significant role both in the shift of decision makers' temporal construal levels and in moderating the impact of number of options on purchase deferral. We also suggested that the shift of consumers' temporal construal levels is the mechanism behind the choice overload effect in a context where customers have a purchase deadline. As information gathered while searching could influence the perceived time pressure resulting in a sense of urgency and a shift to prevention focus resulting in less choice deferral despite large assortments. Thus there is a close association between a consumer's real or psychological perceptions of time and assortment size. Our findings suggest that managers can manipulate consumers' sense of urgency by showing different numbers of options, different varieties, price increase/decrease to customers in order to decrease choice deferrals.

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**Table 1 Summary Statistics of Main Variables of Study One**

<b>Variable</b>	<b>Mean</b>	<b>Standard deviation</b>
Predicted price	146.33	60.86
Price standard deviation among available options	24.75	35.63
Number of available flight options	6.80	4.12
Days till departure (real decision time constraint)	38.97	42.83
Price change since last search	1.93	48.38



**Table 2 Research Result of Study One: Model Parameters**

<b>Variable</b>	<b>Model1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
Predicted price		-0.02* [-0.024, -0.021]	-0.015* [-0.017 -0.012]	-0.017* [-0.019,-0.015]	-0.024** [-0.027, -0.022]
Standard deviation in Price			-0.085* [-0.104, -0.065]	-0.106* [-0.124, -0.087]	-0.126** [-0.136, -0.118]
Number of options	-0.24* [-0.247, -0.218]		-0.133* [-0.154, -0.106]	-0.0119* [-0.139, -0.095]	-0.111** [-0.162 -0.069]
Price change since last search			0.010* [-0.09, -0.012]	0.010* [0.009, 0.012]	0.008** [0.004, 0.011]
Days till departure		-0.003* [-0.004, -0.002]		-0.001 [-0.013, 0.001]	0.015** [0.008, 0.020]
Days till departure × number of options					-0.004** [-0.005, -0.003]
Days till departure × price standard deviation among available options					-0.0019** [-0.002, -0.0015]
Days till departure × price change since last search					0.0001** [0.000, 0.001]
<b>DIC</b>	23,801.29	24,344.47	20,252.79	19,807.79	16,518.47

Note: The results include means of individual specific parameters. Route dummies for not included in the interest of space. \*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$

**Table 3 Research Result of Study Two: Difference among Scenarios**

Scenario	N	Mean	Mean diff.	t-value	Significance
<b>6 options</b>	412	0.80	0.03	1.098	0.272
	408	0.83			
<b>12 options</b>					
<b>30 days</b>	410	0.77	0.09	3.335	0.001***
	410	0.86			
<b>7 days</b>					
<b>Without urgency</b>	410	0.75	0.13	4.625	0.000***
	410	0.88			
<b>With urgency</b>					

\* p<0.05 \*\*p<0.01 \*\*\*p<0.001

**Table 4 Research of Study Two: Influence of Sense of Urgency in each Scenario**

Assortment	Scenario	N	Mean	Mean diff.	t-value	Significance
6	30 days	103	0.68	0.11	1.882	0.063
	7 days	103	0.79			
	30 days scarcity	103	0.83	0.06	1.421	0.158
	7 days scarcity	103	0.89			
	30 days	103	0.68	0.15	3.152	0.002***
	30 days scarcity	103	0.83			
	7 days	103	0.79	0.10	2.593	0.011***
	7 days scarcity	103	0.89			
	30 days	102	0.72	0.10	2.076	0.040***
	7days	102	0.82			
30 days scarcity	102	0.84	0.09	2.563	0.012***	

12	7 days scarcity	102	0.93			
	30 days	102	0.72	0.08	2.570	0.012***
	30 days scarcity	102	0.84			
	7 days	102	0.82	0.11	2.945	0.004***
	7 days scarcity	102	0.93			

\*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$