Behavioural Theory and Modelling Travel Decision Processes in Leisure Tourism

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Abstract

The paper at hand presents work in progress about destination decision making processes in the planning phase of leisure tourism trips. The interest in this topic is manifold and it includes different dimensions, such as the destination, the travel mode, the accommodation and the order of the choice itself, which is the main interest of this paper. Many studies have been conducted upon, how consumers choose their holiday. Most of them focus on destination decision models, where the focal point of interest is the destination. Transportation and accommodation are respected in these models, but mostly bundled and considered as a simultaneous decision element. It is one aim of this paper to raise the question if this is really the case. Acknowledging how tourists make decisions in the first place and how they adapt their habits to developments within the travel industry is an important factor to adapt to their needs and in best case steer them to a destination.

The research is still at a preliminary stage, but we are able to deliver first results from small experiments and describe the next principal steps for further research. The methodology of this research will be based on a choice experiment in order to test for different decision-making chains within tourism. The results from our experiment, including a focus group, give first insight into different sequences of decision-making. We consider this an important step towards the design of a Discrete Choice Experiment, which is the ultimate goal of the overall research. The results of this paper furthermore contribute to the destination decision-making literature by confronting our results with traditional destination decision models.

Keywords

decision-making, destination choice, tourism research, sequential decisions

1. Introduction

Each decision made is the outcome of a unique situation. However, we can roughly categorize the types of situations in which we are confronted with a choice. There are ad hoc decisions or decisions that require more sophisticated and advanced planning, such as decisions on a career, the grocery, end of life, weekend plans and vacation decisions. Decisions about the latter, planning a vacation, has been researched thoroughly in terms of how, where and when tourists book their vacation. Although travel decision-making has been studied by many researchers, still there is no clear idea about the sequences of travel decision making.

In this working paper, we approach this problematic and the aim is to gain enough knowledge to create a Discrete Choice Experiment for sequential-decision making and to test for it in our future research process. In laboratory experiments, we therefore crystallize different scenarios upon the order of choice of different travel.

There is common agreement that a trip consists mainly on the three basic elements including transportation (T), accommodation (A) and destination (D). To assemble an entire trip, the consumer consequently has to decide on these three elements. It is straightforward to assume that these decisions are interrelated and eventually have an effect on each other. Think about an island, which can only be reached by airplane. In this case, it is obvious, that the choice of the transport mode has an effect on the destination choice, or vice versa. Still, the decision processes about TAD is researched mostly isolated (T or A or D) or perceived as a joint decision, assuming that decisions about TAD are underlying simultaneous processes. However, we do not really know with certainty, how the processes actually look like. Eventually decision-processes vary not only by tourist, but also by trip type. We therefore forward the following hypothesis:

H1: The order of choice is different for different types of trips, and the individual.

Certainly this hypothesis deserves a research design that satisfies the many different dimensions yet found to be relevant in destination decision-making. Given the early stage of the research we have not yet come up with the right way to tackle this idea. In any case the conducted experiment delivers enough information to partially answer the hypothesis. Furthermore, the experience and results gained out of the experiments provide us with useful knowledge for the design of a Discrete Choice Experiment. Considering only the essential three elements of transportation (T), accommodation (A) and destination (D) for a hypothetical trip, the design of the choice experiments (appendix) allow for following combinations: 1.TDA, 2. TAD, 3. ATD, 4. ADT, 5. DAT, and 6. DTA.

Results indicate, that scenarios commencing with transportation are the most frequent ones. This already is evidence that the assumption of destination being the first choice does not always hold truth. Additionally, if it where truth that transportation and accommodation are simultaneous decisions, they should be at least following each other, which prohibits the combinations TDA and ADT. As the aim is to analyze the chain of sequences, hence the order of choice of the elements TAD, we keep the experiment on purpose primarily simple before developing a more sophisticated model. Keeping this in mind, this working paper is oriented on the rich Discrete Choice literature and follows the suggestions for general modeling by Ben-Akiva and Bierlaire (1999) as suggested in the Handbook of Transportation Science, the general assumptions for Discrete Choice Models include a framework including 1. the decision maker, 2. the alternatives, 3. the attributes, and 4. the decision rule.

2. Literature Review

Traveler destination choices fascinate researchers since decades and this topic has not yet suffered refreshing updates from time to time. By now, tourism research profits from a broad literature on destination decision-making analysis (Lancaster, 1966; Goodrich, 1978; Crompton, 1979; Ben-Akiva & Lerman, 1985; Woodside & Lysosnki, 1989; Echtner & Ritchie, 1993; Sirgy & Su, 2000; Seddighi, & Theocharous, 2002). In almost all studies, the focal interest is the destination. Think about case studies for tourism demand in Rimini, domestic tourism in China, and many more (Um & Crompton, 1990; Morley, 1994; Huybers, 2003; Brau, Scorcu, & Vici; 2006; Nicolau, & Más 2006; Beerli, 2004). However, although there is a rich literature on destination decision-making studies, sequential decision-making processes have been analyzed by fewer researchers. Originally, the idea of looking at different sequences derives from sociologic and psychological research and has been recycled various times (Abbott, 1995). In tourism for example, Yang, Fik and Zhang (2013), focus on multiple destination decisions. Other studies with respect to sequential decision making acknowledge the multi-stage process in destination decision-making, but neglect different orders of choice. We find approach in the many models (Simon, 1977, cited in Pomerol & Adam; 2004, Eugenio-Martin 2003), which are rather static and don't allow for different orders for different types of trips undertaken. However, some researchers have started to take timing and decision dynamics into account. Dellaert, Ettema and Lindh (1998), put the destination choice in the first position, acknowledge for the interdependencies among the different choices and see scope for investigating the timing of choices as suggestion for further research. Fesenmaier, Xiang, Pan, and Law (2011) take online search engines into consideration and conclude a decision framework based on different phases of information search. Recent advances in sequential

decision making in tourism are made by Dellaert, Arentze and Horeni (2013), based on Grigolon, Kemperman, and Timmermans (2012). Grigolon et al. (2011) present a binary mixed logit panel model applied to the Dutch Continu Vakantie Onderzoek (CVO) database, which contains information about the travel behavior of Dutch citizens. They achieved to isolate different sequences of decision-making and interpret the results in connection with tourist life cycles. We take this study as anchor and try to add the dimension of different choice order for different trip types.

3. Methodology

Initially, over 120 potential participants were contacted. Among each of the subsamples, the participants were selected randomly from email lists or on campus. In our experiments, a total of 22 participants were recruited at the Università della Svizzera italiana (USI). We included four different groups of decision makers with distinctive life cycles: academic staff, Bachelor and Master students, doctoral students and professors. All decision makers are related to the Universitá della Svizzera italiana, as we derived all participants of the experiment from the campus. Each group of participants was given the same choice experiments, which was followed up by a focus group discussion. The personal on campus, or email, invitation reached the participants 10 to 14 days prior the scheduled group. Those who signalled willingness to volunteer where reminded 24 hours prior the experiments.

The experiments took place on four different evenings between March 10th and 14th in rooms of the Universitá della Svizzera italiana. The experiment sessions lasted between 45 and 60 minutes and were recorded with digital voice recorder. The language of the experiments,

including focus groups, is English as lingua franca in order to avoid miscommunication and enhance discussion flow. The choice experiments had a paper & pen character and were solved individually in order to rule out peer effects. Each participant was asked to create at minimum three travel scenarios, each including one accommodation, one transportation and one destination. To find out the reasoning why or why not they have chosen different alternatives of the choice set was part of a subsequent discussion. The participants were given a choice sets with three columns containing the TAD element alternatives (see appendix). Thereby each column contains the same elements, but they are randomly ordered within each column and the participant is asked to circle and connect the chosen alternatives for each trip, starting from the first left column and ending with the third, right column.

In the second part of the experiment, the created scenarios were used as a basis of discussion for the focus group. Kitzinger (1995) suggests, that a focus group is a particularly useful method for exploring people's knowledge and experience about a certain topic. We included this part in order to have a rich source of information that we can use for interpreting the scenarios and alternatives chosen.

4. Results

From all invited individuals, 22 participants took part in four separate experiment groups in different life cycles. In total 15 men and seven women participated in the experiment. Among them, there were four academic staff members, seven professors, five doctoral students and six Bachelor and Master students.

Table 1 Number of participants and rough life cycle categories

Life cycles	Groups	
young (without children)	**Bachelor/Master Students (6)** average age: 22 years	**PhD students (5)** average age: 26 years
older (married, with children)	**Administrative staff (4)** average age: 36 years	**Professors (7)** average age: 44 years

In total 71 trip scenarios were created, of which 59 actually contained the required three elements transportation, accommodation and destination. The remaining 12 scenarios could not be included in the analysis of sequences because they contained at least two alternatives of the same element and hence violated the decision rule to choose one alternative of each element. In addition to the analysis of the sequences, we analyzed all selected choices within the choice set based on frequency and category (T, A or D). Results indicate that there are certain alternatives, which are selected more often (private car), while others where almost never selected (bus). Focusing on the entire choice set we observe, that the plane is the most often chosen transport mode, which accounts in total for 39% of the participant's choices. In our experiment we distinguish between low cost airline (21%) and common commercial plane

(18%). This is followed by private car (37%) and taking the train (11%). The bike was chosen by 8% and the bus only by 1% of the participant's scenarios. The alternative cruise had to be analyzed more carefully, because dependent on the situation, a cruise was interpreted as accommodation or transportation mode. However, thanks to the combinations among the sequences and the in depth discussion subsequent to the choice experiments, we could distinguish between these two interpretations. Therefore we can conclude, that the alternative cruise makes up 4% of the participants transportation choice.

Figure 1 Transportation choices

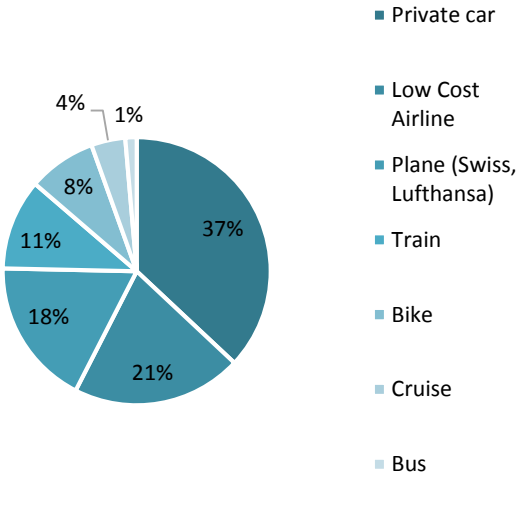
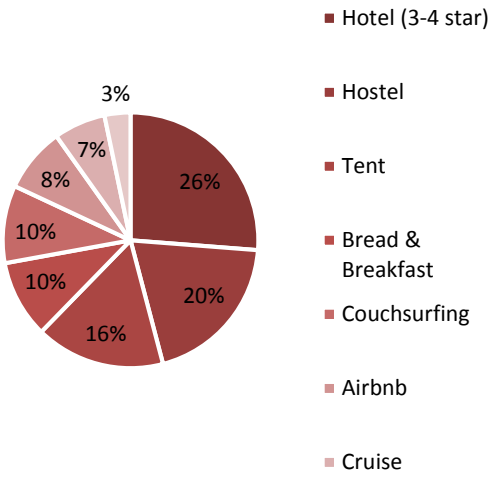


Figure 2 Accommodation choices

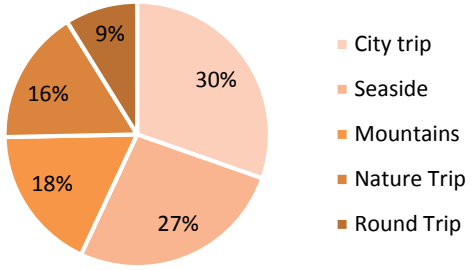


Taking a look at the accommodation choices, we discover, that the alternative of 3-4 star hotel is the preferred choice for 26% of the participants created scenarios. This is followed by the choice of the hostel (20%) and sharing economy accommodation (18%), which we split into airbnb (8%) and couchsurfing (10%). The tent (16%) and bed & breakfast (10%) make up about one fourth of the participants accommodation choice. The more costly alternatives cruise (7%) and Ritz Carlton (3%), representative for a high class hotels, where chosen the least often. In contrast to transportation and accommodation, the picture of chosen destinations looks quite balanced. The alternative city trip (30%) amounts for roughly one third of the selected

destination alternatives. This is followed by seaside (27%), mountains (18%) and nature trip (16%). The round trip as an option for multiple destinations was chosen the least (9%).

Respecting the order of choice in the following, we go on with our analysis considering only

Figure 3 Destination choices



the 59 correctly specified scenarios, which each contain one transportation, one accommodation and one destination element. Since of all 71 scenarios this is not the case in for 12 scenarios, we simply don't consider them for our analysis in this part.

The analysis of the different sequence chains of first, second and third decision, show, that transportation is the most often selected choice in sequence one and that TAD is the most often chosen sequence upon all travel scenarios. All four groups have mostly started the scenarios with a transportation mode, whereas the subsequent decisions between accommodation and destination vary among the groups. In total, the lead of first choice is taken by transportation with 33 cases, out of them 18 TAD and 15 TDA scenarios. Ranked second place we find destination as first choice, with a division of nine DAT scenarios and seven DTA scenarios. Finally, accommodation is the least often first choice with ten scenarios, of which seven are ATD and three are ADT scenarios.

Table 2 Overview of different trip scenarios

First Choice	number of scenarios (..)	Combinations (..)	
T	most often (33)	TAD (18)	TDA (15)
D	second most often (16)	DAT (9)	DTA (7)
A	least often (10)	ATD (7)	ADT (3)

Zooming into the groups we find the diverse results among the 59 valid scenarios. The group of the academic staff chose the transport mode as first choice in eight out of 12 scenarios. Destination was chosen three times and accommodation only one time as a first choice within this group. As second choice, accommodation leads with 9 selection within this sequence, followed by destination (2) and transportation (1). Consequently, the selections within the third sequence are mainly split into destination (7) and transportation (3), with solely one selection of accommodation. The most frequent combination within this group is following the TAD order of choice. Among them, the private car is the most often selected transport mode.

Within the group of professors we observe that the transport mode is the first choice selected in 10 out of 15 created scenarios. While destination was never selected as first choice in this group, accommodation was chosen five times in sequence one. In contrast to the group of academic staff, the second sequence contains eight scenarios in which the destination is the second choice, four scenarios in which accommodation, and three scenarios in which transportation is the second choice selected. In the third sequence of the professors, the selections left are split into seven accommodations, six destinations and two transportation

selections. The most frequent combination in the group of professors is TAD (6) with the private car as preferred transport mode as well.

Doctoral students chose the transport mode as first choice in eight out of 15 valid scenarios. This is followed by the selection for accommodation (4) and destination (3) as first choice of the created scenarios. The second sequence is balanced among TAD, with each five selections. The remaining selections for the third sequence are seven times destination, six times accommodation and two times transportation. The most frequent combinations TAD and TDA were chosen both four times, while the preferred transport mode was the plane (5).

The remaining group of students selected transportation in seven out of 17 created scenarios as first choice. Destination and accommodation where selected equally five times in the first sequence. Similar to the group of professors, destination (8) is the most often selected second choice within the trip scenarios. This is followed by transportation (5) and accommodation (4). Finally, the choices of the third sequence are split into eight times accommodation, five times transportation and three times destination. The most frequent combination among this group is TDA (6), where the plane was selected three times, the car twice and the train, as well as cruise both one time. With respect to the travel types, we don't observe clear clusters and therefore can't identify specific travel types on the macro of the entire sample and micro level of the different groups. Solely the combination between low cost carriers and city trips appears more often than other scenarios.

5 Discussion

The results obtained from the experiments motivate to revive the discussion about simultaneous versus sequential decision-making processes in tourism. Furthermore, the differences in the results suggest, that life cycles influence travel decisions. For instance, we have seen, that professors choose different alternatives than students. While one of the few connections we could find appear to be between low cost carriers and city trips, we have no evidence for clearly specified travel type clusters couldn't be crystallized. Therefore, for now we have to neglect the hypothesis:

H1: The order of choice is different for different types of trips, and the individual.

The most frequent order of choice started with the element transportation, mostly followed by accommodation and finishing in 25 scenarios with destination. The results obtained in our experiments suggest, that there are interdependencies of the different decisions made. While there are many possible explanations for this order, e.g. a real trip chronologically starts with transportation, we stress, that a decision of the first sequence possibly has an effect on subsequent decisions. Choosing the private car in the first sequence for instance, might reduce the choice set of accommodation, if consequently would exclude the alternative cruise. Determining the options available to the decision-maker is a crucial step in the design phase for a Discrete Choice Model. Here we can profit from the experiment results, because they help to avoid misspecification and omit variables, which would harm the robustness of the model.

6. Limitations

The research at hand is still preliminary because we do not account very detailed for coupling, neglect seasonality and length of stay and other possible explanatory variables. We suggest to conduct a Discrete Choice Model including all alternatives used for the experiment, but indicating their meaning better. The alternative cruise, or round trip could have been irritating for instance. The 12 falsely composed scenarios give more insight into misspecifications, which we want to avoid in future. In total, the experiment design also bears several itchy points. For instance, alternatives are both, labeled and unlabeled within the same choice set. This resulted in unclear interpretation of alternatives, as some which originally were meant as a transportation, were used as a destination. Furthermore, there is no blank fill in option for "other", which could have increased knowledge about unintentionally omitted variables

7. Conclusion

The paper gives insight into sequential decision-making within tourism and contributes to the discussion on this topic. As a drawback of the conducted experiments, we have to admit that the design included homemade problems. Nevertheless, as stated in the limitations, we have learned what not to do in a choice experiment in future. Anyhow, we deliver enough evidence to revive the discussion about destination decision-making models with respect to the order of choice. We can for instance depart from the revealed dynamic order of choice. The combination TAD was not the only one we observed. Others combinations where TDA or ADT, which stands in conflict with the known sequential or multi-stage destination decision models thus far. Therefore this paper gives a valuable contribution to the literature and motivates to research this topic further. In addition, we have observed, that throughout the different groups, different

alternatives where chosen. The surprising result was, that the order of choice seemed to follow the chronological process of making a vacation. Hereby we find the same phenomenon among all groups, which implies a uniform cognitive process of decision-making in the tourism context,

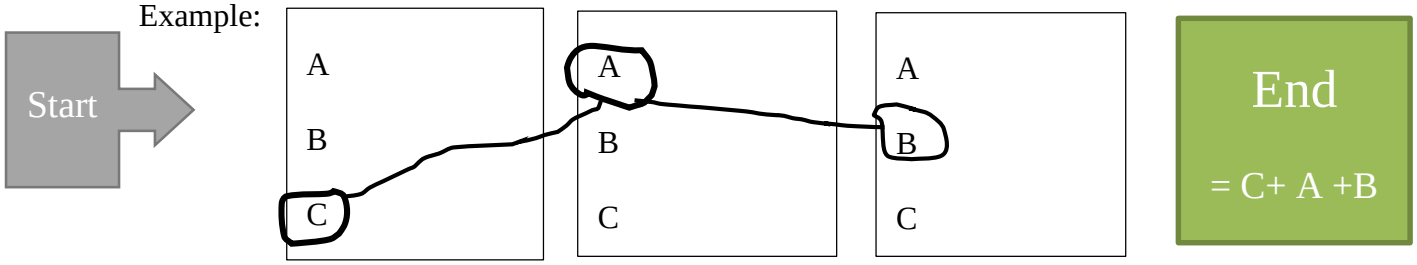
Concluding, creating a Discrete Choice Model upon this approach is a reasonable methodology to go on with the research about *Behavioral Theory and Modelling Travel Decision Processes in Leisure Tourism*. This proposed methodology is not only recognized by many researchers, but also allows for multiple dimensions that we could test for, such as socioeconomic characters, perceived values of vacation, travel company and many more. Therefore we suggest extending the set of explanatory variables based on suggestions of the rich literature of decision-making. Finally, a carefully designed Discrete Choice Experiments prevents homemade design errors and usually delivers data that can actually be used for econometric analysis.

8. Appendix

Figure 4 Individual choice experiment

*Please connect **one choice of each column with each other** for a potential trip. Please create a **minimum 3** (or more) potential trips.*

Example:



Start

a. Private car	a.Hostel	a. Low Cost Airline
b. Hotel (3-4 star)	b. City trip	b. Hostel
c. Couchsurfing	c. Bike	c. Bread & Breakfast
d. Mountains	d. Ritz Carlton	d. Tent
e. Train	e. Nature Trip	e. City trip
f. Plane (Swiss, Lufthansa)	f. Cruise	f. Couchsurfing
g. Round Trip	g. Low Cost Airline	g. Bike
h. Airbnb	h. Seaside	h. Cruise
i. Hostel	i. Bread & Breakfast	i. Bus
j. Nature Trip	j. Round Trip	j. Round Trip
k. Tent	k. Airbnb	k. Airbnb
l. City trip	l. Private car	l. Private car
m. Bike	m. Hotel (3-4 star)	m. Nature Trip
n. Cruise	n. Mountains	n. Ritz Carlton
o. Bus	o. Tent	o. Hotel (3-4 star)
p. Low Cost Airline	p. Couchsurfing	p. Mountains
q. Seaside	q. Train	q. Train
r. Bread & Breakfast	r. Plane (Swiss, Lufthansa)	r. Plane (Swiss, Lufthansa)
s. Ritz Carlton	s. Bus	s. Seaside

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