

Master Thesis Proposal

Discrete Choice Model estimation in the Airline industry

The choice between different transport modes for a trip can be characterized as a discrete choice situation, as the best travel option is selected by customers. These decisions can be modelled with discrete choice models; their most prominent functional specification is the multinomial choice model (MNL). An underlying assumption of the models is the possible decomposition of the product or service in attributes with different levels, where each attribute level is connected to a particular partial utility. As example, Coldren et al. (2003) identified itinerary service characteristics for flights connecting east & west coast of the United States as attributes and estimate the part worth utilities of the respective attribute levels. The emergence of online booking engines and data availability create a new possibility to analyze real-life data for parameter-estimation.

Aim of the master thesis should be to...

- introduce and compare the MNL and similar different discrete choice models,
- provide an overview of projects measuring the utility of air travel and competing transport modes including attributes, their levels, and chosen segments,
- conduct a discrete choice experiment or analyze a dataset about passenger choices empirically,
- identify and discuss the state-of-the-art approach in choice model estimation for air travel,
- to provide open research gaps and future trends.

Recommended basic literature:

Adler, T., Falzarano, C. S., & Spitz, G. (2005): Modeling service trade-offs in air itinerary choices. *Transportation Research Record*, 1915(1), 20-26.

Coldren, G. M., Koppelman, F. S., Kasturirangan, K., & Mukherjee, A. (2003): Modeling aggregate air-travel itinerary shares: logit model development at a major US airline. *Journal of Air Transport Management*, 9(6), 361-369.

Train, K., & Ebrary, Inc. (2009): *Discrete choice methods with simulation* (Second ed.). Cambridge New York Melbourne Madrid Cape Town Singapore São Paulo Delhi Mexico City