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Master Thesis Proposal

Discrete Choice Model estimation for Intercontinental Travel

The choice between different Travel options between two locations 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. Many studies were able to identify itinerary service characteristics for flights connecting city pairs within countries (e.g. east & west coast of the United States) or even within continents; as a result, attributes and estimates for the part worth utilities of the respective attribute levels were estimated. On the other hand, literature considering intercontinental travel is sparse. Due to the longer travel duration, more complex product and generally higher price, customers might have different preferences compared to continental travel.

Aim of the master thesis should be to…
- introduce and compare the MNL and similar different discrete choice models,
- identify and discuss the state-of-the-art approach in choice model estimation for air travel,
- provide an overview of projects measuring the utility of international air travel including model specifications, attributes, their levels, and chosen segments,
- conduct a discrete choice experiment or analyze a dataset about passenger choices of longhaul travel empirically and discuss managerial applications for schedule design,
- provide open research gaps and future trends.

Recommended basic literature:

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.

Collins, A. T., Rose, J. M., & Hess, S. (2012). Interactive stated choice surveys: a study of air travel behaviour. *Transportation*, *39*(1), 55-79.

Munoz, C., Laniado, H., Córdoba, J, 2020: Airline choice model for an international round-trip flight considering outbound and return flight schedules. *Archives of Transport*, 54(2), 75-93. DOI: https://doi.org/10.5604/01.3001.0014.2969

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