UNIVERSITY OF MANNHEIM
Business School

CHAIR OF SERVICE
OPERATIONS MANAGEMENT
Prof. Dr. Cornelia Schön

Consideration Set Formation with Applications to Discrete Choice Models

Consideration set refers to a subset of all available alternatives over which consumers make utility comparisons before making choice decisions (Howard and Sheth 1969, Mehta et al. 2003, Wang 2021). Consideration set formation is an outcome of consumers' limited information-processing ability or limited information-acquisition ability (Manrai and Andrews 1998). Due to such a ubiquitous driving force behind consideration, the concept of "consideration set" has received considerable academical attention, and researchers began to theoretically or empirically investigate consideration set formation (e.g., Hauser and Wernerfelt 1990, Roberts and Lattin 1991, Andrews and Srinivasan 1995), especially under discrete choice models (DCMs). To model consumers buying multiple products within the DCM framework, Gallego and Wang (2019) developed a threshold utility model under which consumers select the products whose net utility exceeds a specific threshold, and suggested that this model can be viewed as the formation of a consideration set. Stimulated by this study, Tian et al. (2020) and Wang (2021) discuss the threshold effect on consumer choices. In particular, Wang (2021) derived a two-stage multinomial logit (TMNL) model with a consideration set under which in the first stage consumers form a consideration set by removing alternatives whose certain-part utility is lower than a threshold and in the second stage consumers, after ascertaining uncertain-part utility of alternatives in their consideration sets, select the one with the highest total utility.

The objectives of this master thesis are to:
- review the literature on consideration set,
- discuss TMNL model developed by Wang (2021) in detail,
- estimate TMNL model (see the estimation procedure in Roberts and Lattin (1991) and Andrews and Srinivasan (1995) for the reference),
- explore possible extensions of TMNL model,
- elaborate one extension of TMNL model in detail, from the motivation to the optimization problem, and discuss the challenges of solving this problem,
- provide open research gaps and future trends of research on consumers' consideration set.

Basic Literature:

Andrews, R. L. and Srinivasan, T. C. (1995). Studying consideration effects in empirical choice models using scanner panel data. *Journal of Marketing Research,* 32(1), 30-41.

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Manrai, A. K. and Andrews, R. L. (1998). Two-stage discrete choice models for scanner panel data: An assessment of process and assumptions. *European Journal of Operational Research*, 111(2), 193-215.

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