

Master Thesis Proposal

Prescriptive Analytics for the Design of Experiential Services

Past researchers have found empirical evidence that customers consider the sequence of event utility when evaluating past and future service experiences. Dixon and Verma (2013) provide a thorough review of the psychology and behavioral economics literatures concerned with sequence effects and cite four main effects that emerge as relevant to sequencing service encounters: (i) the impact of the highest point, most intense, or highest utility part of an experience (Peak Effect); (ii) the impact of the last point of an experience (End Effect); (iii) the impact of the timing of the peak (Spread Effect); (iv) and the overall trend of the experience over time (Trend Effect). Dixon et al. (2017) investigate the design of peak events in a service sequence by testing how anticipated and surprised peaks influence customer perceptions.

Based on the empirical results by Dixon and Verma (2013), Dixon & Thomson (2016) formulate an optimization problem with a focus on optimizing schedule sequence characteristics in order to maximize customer experiences. Other researchers (e.g., Das Gupta et al. 2016, Roels 2019) have developed mathematical models to optimize the service experience by incorporating selected psychological constructs like memory decay or acclimation and thereby mapping the underlying mental processes in the consumer's brain.

The objective of the master thesis is to

- review and classify current empirical knowledge on sequence effects (descriptive/predictive analytics) as well as state-of-the-art approaches to service experience design (prescriptive analytics);
- compare different optimization approaches and discuss their advantages and limitations;
- discuss the prescriptive approach by Dixon & Thomson (2016) in detail;
- implement the model by Dixon & Thomson (2016) in AMPL and apply it to solve an academic example.

Requirements

- OPM 781
- Profound knowledge in Operations Research and Revenue Management
- Excellent analytical skills and an ability to transform real-world business problems into Operations Research models

Administrative information for writing a master thesis at the Chair of Service Operations Management can be found [here](#).

Selected Literature Recommendations

Bellos, I., & Kavadias, S. (2020). Service design for a holistic customer experience: A process framework. *Management Science*. Published Online: 21 Aug 2020

<https://doi.org/10.1287/mnsc.2020.3609>

Das Gupta, A., Karmarkar, U. S., & Roels, G. (2016). The design of experiential services with acclimation and memory decay: Optimal sequence and duration. *Management Science*, 62(5), 1278-1296.

Dixon, M. J., & Thompson, G. M. (2016). Bundling and scheduling service packages with customer behavior: Model and heuristic. *Production and Operations Management*, 25(1), 36-55.

Dixon, M. J., & Thompson, G. M. (2019). The Impact of Timing and Bundling Flexibility on Affect-Based Service Package Design. *Decision Sciences*, 50(5), 948-984

Dixon, M., & Verma, R. (2013). Sequence effects in service bundles: Implications for service design and scheduling. *Journal of Operations Management*, 31(3), 138-152.

Dixon, M. J., Victorino, L., Kwortnik, R. J., & Verma, R. (2017). Surprise, anticipation, and sequence effects in the design of experiential services. *Production and Operations Management*, 26(5), 945-960.

Roels, G. (2019). Optimal structure of experiential services: Review and extensions. *Handbook of Service Science*, Volume II, 105-146.