UNIVERSITY OF MANNHEIM
Business School

CHAIR OF SERVICE OPERATIONS MANAGEMENT
Prof. Dr. Cornelia Schön

Master Thesis

"What are the most important attributes when designing an Electric Toothbrush?"

In light of several recent developments, companies are forced to rethink their product design approaches. Two of the most pressing developments are the current COVID-19 crisis – with implications on governments, companies as well as individuals – and the increasing environmental challenges. Both developments have an impact on individuals and their preferences, which translates to changes in customer demand for products. Hence, companies are forced to review their product design strategies in order to not fall behind.

The challenge of designing products that fit to (changing) customer preferences is not new in the business world. Companies have faced similar challenges for decades. To facilitate the product design decisions, choice-based conjoint analysis (CBC) as a decomposition preference-elicitation method was developed in the 19th century. It is a highly useful method to derive the implicit values – so called part-worth utilities – for product attributes (and their levels). The derivation is done by conducting a choice experiment with potential customers, who are asked to select their most-preferred from a set of offered alternatives, each defined (conjointly) by two or more attributes. Individual values for attributes (and their levels) are then derived using the respondent choices and dedicated empirical techniques. Since 1990s, CBC has become a widely used method in both worlds, commercial as well as scientific.

The objectives of this thesis are to…

- introduce the topic of product design, with focus on current developments (environmental challenges and COVID-19 implications on customer preferences) driving the need to rethink product design strategies;
- introduce the CBC approach and discuss its relevance in today's research and practice;
- discuss the relevance and applicability of planned obsolescence for the product category of Electric Toothbrushes;
- set up a CBC study for Electric Toothbrushes in Sawtooth Software. Please note that the necessary attributes will be provided by the Chair. Also, a student license for Sawtooth Software will be provided by the Chair;
- analyze what would be an appropriate sample of respondents to get representative and generalizable results;
- conduct the CBC and analyze the study results,
- derive implications for designing an Electric Toothbrush and discuss the results, in particular in light of the current Electric Toothbrush market.

Basic Literature:

Agrawal, V. V., Kavadias, S., & Toktay, L. B. (2016). The limits of planned obsolescence for conspicuous durable goods. Manufacturing & Service Operations Management, 18(2), 216-226.

Baier, Daniel; Brusch, Michael (2009). Conjointanalyse: Methoden-Anwendungen-Praxisbeispiele: Springer-Verlag.

Bulow, J. (1986). An economic theory of planned obsolescence. The Quarterly Journal of Economics, 101(4), 729-749.

Eggers, F., Sattler, H., Teichert, T., & Völckner, F. (2018). Choice-Based Conjoint Analysis. Handbook of Market Research, Springer, Cham, 1-39.

Green, Paul E.; Srinivasan, Venkat (1990). Conjoint analysis in marketing: new developments with implications for research and practice. In Journal of Marketing 54 (4), pp. 3–19.

Orme, B. (2010). Getting started with conjoint analysis: strategies for product design and pricing research second edition. Madison: Research Publishers LLC. Partly available online here.

Reutterer, T., & Dan, D. (2018). Cluster Analysis in Marketing Research. Handbook of Market Research, Springer, Cham, 1-29.

Sawtooth Software (2017). The CBC system for choice-based conjoint analysis: Version 9. Available online here.