

Bachelorarbeiten Wipäd FSS 2025

“Aktuelle Themen in Service Operations Management”

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Thema W01: Stakeholder perspectives on short product durability

In the quest for profit maximization, many companies have opted for a strategy of short durability of products. With this strategy, products are designed with an artificially limited useful life such that they are no longer functional after a certain period of time. The rationale behind the strategy is to generate long-term sales volume by reducing the time between repeat purchases.

However, is it truly beneficial for the companies to opt for increasingly shorter product durabilities? And what is the perspective of consumers and governments on shorter product durabilities?

The objective of the thesis is to provide a review on the topic of product durability and critically assess this topic from different perspectives. Focus should be placed on empirical evidence and case examples.

The objectives of this thesis are to:

- Review the literature on product durability, focusing on empirical evidence and case examples;
- Discuss whether products are less durable today than decades ago;
- Discuss the pros and cons of short product durability from a company perspective;
- Discuss the pros and cons of short product durability from a consumer perspective;
- Discuss the pros and cons of short product durability from a government perspective;
- Exemplify the above discussions for a self-picked household device.

Basic Literature:

Bakker, C., Wang, F., Huisman, J., & Den Hollander, M. (2014). Products that go round: exploring product life extension through design. *Journal of cleaner Production*, 69, 10-16.

Cooper, T. (Ed.). (2010). Longer lasting products: Alternatives to the throwaway society (1st ed.). *Routledge*.

Guiltinan, J. (2009): Creative destruction and destructive creations: environmental ethics and planned obsolescence. *Journal of business ethics* 89(1), 19-28.

Slade, G. (2009). Made to break. *Harvard University Press*.

Thema W02: Environmental impact of short product durability

In the quest for profit maximization, many companies have opted for a strategy of short durability of products. With this strategy, products are designed with an artificially limited useful life such that they are no longer functional after a certain period of time. The rationale behind the strategy is to generate long-term sales volume by reducing the time between repeat purchases.

While the companies may have an incentive for this strategy of “planned obsolescence”, the impact on the environment is unclear. Does the strategy of short durability contribute to the environmental damage?

The objective of the thesis is to provide a review on the topic of product durability and critically assess this topic from the environmental perspective. Focus should be placed on theoretical contributions, mathematical models, and case examples.

The objectives of this thesis are to:

- Review the literature on product durability and planned obsolescence, focusing on theoretical contributions, mathematical models, and case examples;
- Classify the different types of planned obsolescence;
- Discuss whether product durability and planned obsolescence are synonyms;
- Discuss the pros and cons of short product durability / planned obsolescence for the environment;
- Discuss whether the discussion needs to be differentiated along the types of planned obsolescence;
- Exemplify the above discussions for two self-picked household devices.

Basic Literature:

Cooper, T. (2005). Slower consumption reflections on product life spans and the “throwaway society”. *Journal of industrial Ecology*, 9(1-2), 51-67.

Guiltinan, J. (2009): Creative destruction and destructive creations: environmental ethics and planned obsolescence. *Journal of business ethics* 89(1), 19-28.

Packard, V., & McKibben, B. (1963). The waste makers. Harmondsworth: Penguin books.

Van Nes, N., & Cramer, J. (2006). Product lifetime optimization: a challenging strategy towards more sustainable consumption patterns. *Journal of Cleaner Production*, 14(15-16), 1307-1318.

Thema W03: Digital Transformation als interdisziplinäres Forschungsgebiet

Sowohl in der Forschung als auch in der Unternehmenspraxis wächst das Interesse an Digitaler Transformation in den letzten Jahren deutlich. Der Begriff beschreibt dabei Veränderungen am Geschäftsmodell, die durch digitale Prozesse ermöglicht werden. Diese Veränderungen haben einen fundamentalen Einfluss auf das betroffene Unternehmen, da sie die grundlegende Art und Weise, wie ein Unternehmen im Markt agiert, verändern. Aufgrund dieser Bedeutung und Komplexität beschäftigen sich eine Reihe an Forschungsdisziplinen mit Digitaler Transformation – jede mit ihrem eigenen Schwerpunkt und Erkenntnisbeitrag. Während sich Marketing beispielsweise auf die Identifizierung neuer Kundenbedürfnisse in einer immer digitalen werdenden Welt fokussiert, betrachtet Operations Research wie diese neuen Dienstleistungen mit digitalen Prozessen bereitgestellt werden können.

Die Ziele dieser Arbeit sind:

- basierend auf einer Literaturrecherche den Begriff „Digitale Transformation“ zu definieren und von ähnlichen Begriffen abzugrenzen,
- den Beitrag verschiedener Disziplinen wie Operations Research, Marketing oder Informatik zum Forschungsgebiet Digitale Transformation zu beschreiben
- und mit einem Fokus auf Operations Research aktuelle Themen und Trends rund um die Digitale Transformation darzustellen.

Basisliteratur:

Li, F. (2020). Leading digital transformation: three emerging approaches for managing the transition. *International Journal of Operations & Production Management*.

Simchi-Levi, D., & Wu, M. X. (2018). Powering retailers' digitization through analytics and automation. *International Journal of Production Research*, 56(1-2), 809-816.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118-144.

Thema W04: Simulating Passenger Decision-Making in Air Travel: Generating a Synthetic Choice Dataset for Economic Education

The selection of flight options for travel represents a discrete choice scenario, where customers choose the most suitable alternative based on their preferences. These decisions can be effectively modeled using discrete choice models, with the multinomial logit (MNL) model being one of the most widely applied specifications. A fundamental premise of such models is that a product or service can be decomposed into distinct attributes capturing key factors influencing traveler decisions, each with multiple levels, contributing to the overall utility perceived by the customer. For example, buyer-relevant attributes might include price and fare class conditions, departure time, numbers of stopovers, airline, etc.

Choice estimation datasets can be generated through empirical research methods such as conjoint analysis (CA) with structured choice tasks in which respondents identify their preferred alternative. In CA, each choice task includes a set of product profiles, each presented as a combination of attribute levels. Subsequently, after respondents have made their choices, statistical techniques are applied to estimate part-worth utilities associated with different attributes and their respective levels, enabling a deeper understanding of consumer preferences and decision-making behavior. This thesis aims to review choice analysis in the airline industry and to generate a synthetic dataset that simulates consumer preferences for air travel to a selected Caribbean destination. The dataset may serve as a valuable instructional resource in economic education, e.g., for case studies on airline pricing, revenue management, scheduling, and marketing strategies.

The objectives of the bachelor thesis are to ...

- Introduce choice modeling and choice-based conjoint analysis.
- Briefly review the literature of passenger choice models in the airline industry, and identify relevant flight attributes (and their levels) from empirical studies, such as price, airline, departure time, layovers, travel class, baggage allowance, and loyalty program benefits.
- Develop an experimental (e.g., fractional factorial) design to systematically combine attribute levels into hypothetical flight options.
- Implement a simulation using a discrete choice model (e.g., mixed MNL, parametrized based on evidence from the literature) to generate synthetic choice data for flights to the destination "St. Vincent and the Grenadines".
- Identify and illustrate potential applications of the dataset in economic education.
- Provide open research gaps and future trends.

Basic Literature Recommendations

Garrow, L. (2010). *Discrete choice modelling and air travel demand: Theory and applications*. Farnham, Surrey; Burlington, Vt.: Ashgate.

Hess, S., Adler, T., & Polak, J. W. (2007). Modelling airport and airline choice behaviour with the use of stated preference survey data. *Transportation Research Part E: Logistics and Transportation Review*, 43(3), 221-233.

Seelhorst, M., & Liu, Y. (2015). Latent air travel preferences: Understanding the role of frequent flyer programs on itinerary choice. *Transportation Research Part A: Policy and Practice*, 80, 49-61.

Train, K. E. (2009). *Discrete choice methods with simulation*. Cambridge university press.