Harder, better, faster, smarter?
Smart products, their evolving character and the consequences of their acceptance exemplified with autonomous cars

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Introduction

- Artificial Intelligence fueled products become increasingly smarter (Porter & Heppelmann, 2014, Davenport, Guha, Grewal, & Bressgott, 2020). Thus, currently available smart products development stages do not match with future available development stages due to an intelligence increase. However, consumers expect smart products to be smarter than their current capabilities, having the future development stage in mind, leading towards a mismatch between expectations and reality (Davenport & Kirby, 2016; Novak & Hoffman, 2019;Porter & Heppelmann, 2014; Raff et al., 2020; Rijsdijk & Hultink, 2009).
- Smart products are for example:

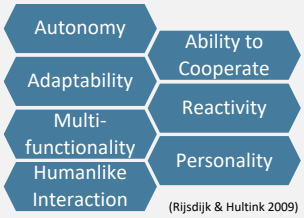
Autonomous Cars | **Smart Robots** | **Smart Home** | **Smart Assistants**

- Smart products are different in their nature due to their unique characteristics and purposes (Porter & Heppelmann, 2014). The application of existing models to measure consumer acceptance is questionable because they are dependent on the test subject (Kuhn et al., 2019; Kuhn & Marquardt, 2020). Potential drivers and barriers must be analyzed and tested with appropriate models.

Theoretical Background

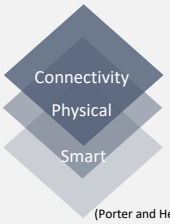
Smart products can be defined differently, i.e. through:

Characteristics



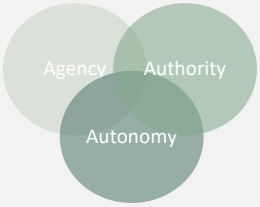
(Rijsdijk & Hultink 2009)

Core Elements



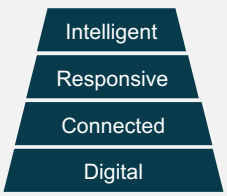
(Porter and Heppelmann 2014)

Dimensions



(Novak & Hoffman 2019)

Archetypes



(Raff et al. 2020)

DHBW Duale Hochschule Baden-Württemberg Stuttgart

ZEF Zentrum für Empirische Forschung

Università degli Studi di Bari Aldo Moro

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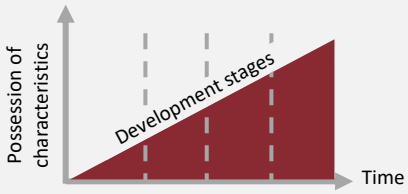
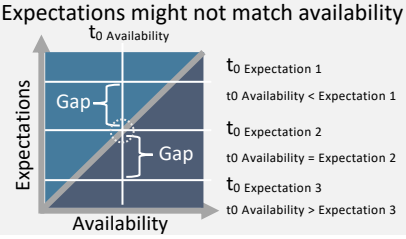
Theoretical Background, continued

Smart products become smarter



Expectations might not match availability



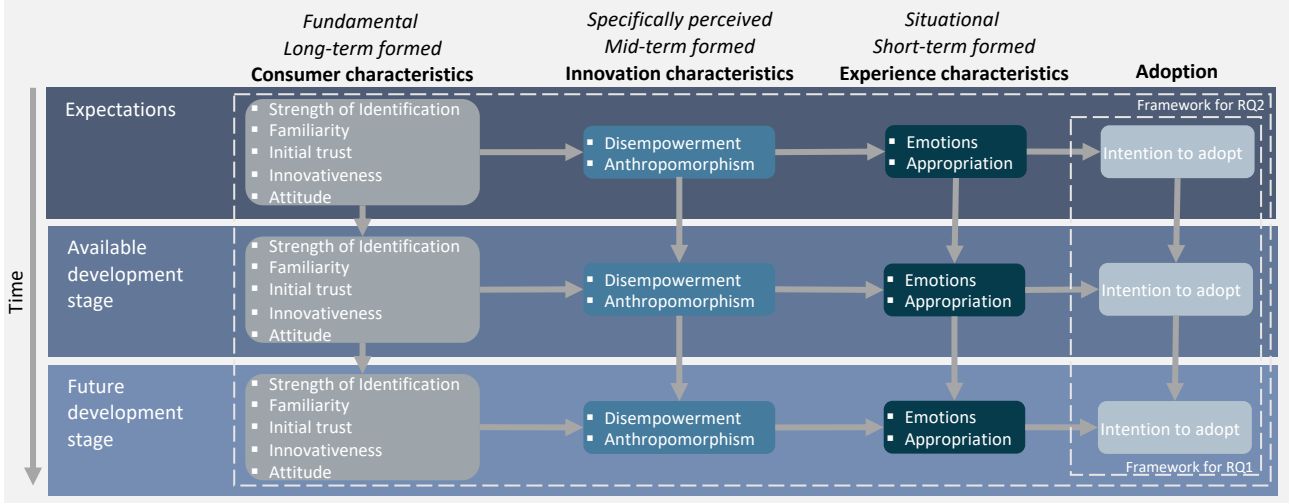
Respected acceptance models/ theories

- Technology Acceptance Model 1-3
- Innovation Diffusion Theory
- Consumer Acceptance of Technology
- Unified Theory of Acceptance and Use of Technology 1-2

Research Questions

1. Do adoption intentions formed in earlier stages with a currently available smart product and its development stage influence the adoption intention of future stages?
2. What are the drivers and barriers for the adoption of smart products and what is their effect on the intention to adopt?

Conceptual Framework



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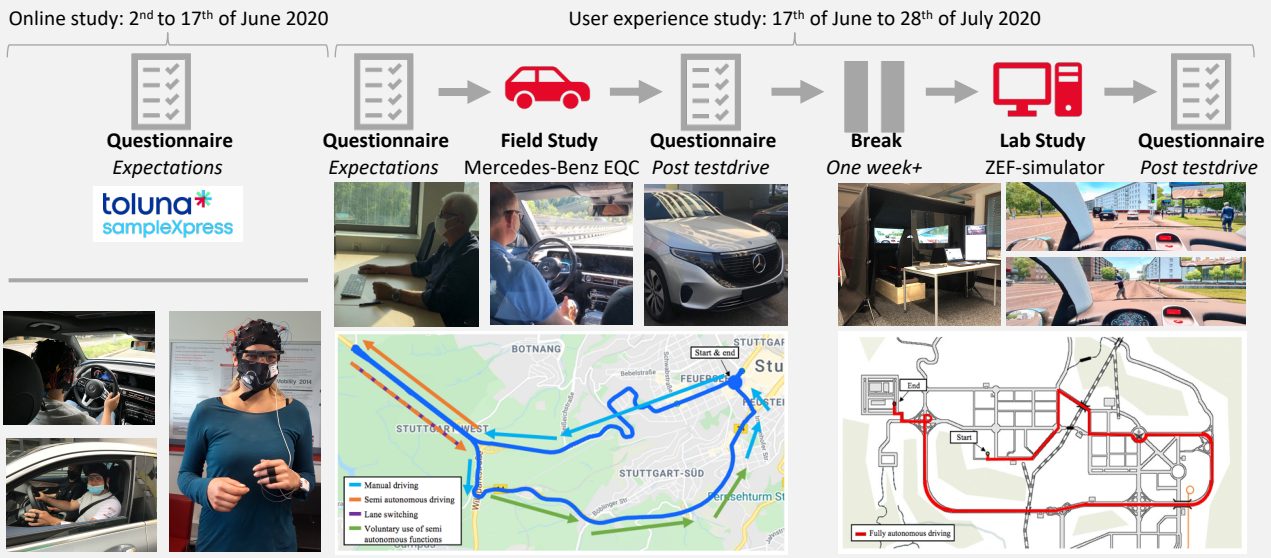
Methodology

Online study (n=331), user experience study (n=129) incl. a collection of neurophysiological data (n = 14)



Selected references

Davenport, T., Guha, A., Grewal, D. et al (2020). How artificial intelligence will change the future of marketing. J. of the Acad. Mark. Sci. 48, 24–42. https://doi.org/10.1007/s11747-019-00696-0.

Davenport, T., & Kirby, J. (2016). Just How Smart Are Smart Machines. MIT Sloan Management Review, 57, 21-25.

Novak, T. & Hoffman, D.L. (2019). Relationship journeys in the internet of things: a new framework for understanding interactions between consumers and smart objects. Journal of the Academy of Marketing Science, 47, 216-237.

Kuhn, M., Lowe B., Sadik-Rozsnyai O., Bertrandias L., Hubert, M. (2019). Special Session: An Abstract on Consumer Interactions with Automated Technologies. In: Rossi P., Krey N. (eds) Finding New Ways to Engage and Satisfy Global Customers. AMSWMC 2018. Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham. https://doi.org/10.1007/978-3-030-02568-7_122.

Kuhn M., Marquardt V. (2020). "What-are-you-looking-at?": Implicit Behavioural Measurement Indicating Technology Acceptance in the Field of Automated Driving. In: Wu S., Pantoja F., Krey N. (eds) Marketing Opportunities and Challenges in a Changing Global Marketplace. AMSAC 2019. Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham. https://doi.org/10.1007/978-3-030-39165-2_246.

Porter, M. & Heppelmann, J.E. (2014). How Smart, Connected Products Are Transforming Competition. Harvard Business Review, 92, 18.

Raff, S., Wentzel, D. and Obwegeser, N. (2020). Smart Products: Conceptual Review, Synthesis, and Research Directions*. J Prod Innov Manag, 37: 379-404. https://doi.org/10.1111/jpim.12544.

Rijsdijk, S.A. and Hultink, E.J. (2009). How Today's Consumers Perceive Tomorrow's Smart Products*. Journal of Product Innovation Management, 26: 24-42. https://doi.org/10.1111/j.1540-5885.2009.00332.x.