GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

Smart Mobility Research Group

Interreg North Sea Region MOVE

European Regional Development Fund

EUROPEAN UNION

TIM-BENJAMIN LEMBCKE, MATHIAS WILLNAT

# Project Partner Meeting – WP 3

## University of Göttingen: MOVE-Related Research

# Research Overview

## Publications

Digital Shared Mobility Services (AMCIS, 2020)

Business Trip Ridesharing Services (WI, 2020)

Digital Nudging and Sustainable Consumption (AMCIS, 2020)

Ridesharing Business Models (ICIS, 2020 – cond. acc.)

## Research-in-Progress

Mobility Need-Adaptive Housing Platforms (WI, 2021 – under review)

Effective and Trustworthy Communication of Medical Information (tbd)

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# Digital Shared Mobility Services

# Status Quo and Research Question

## Key observations

- Consumer awareness and collaborative consumption drive **demand for new mobility solutions**
- Implementation using **Digital Shared Mobility Services (DSMS)**
- Extensive research with specific IS focus is yet lacking

**Relevance for MOVE**

(1) There is a **shortage** of appropriate **public transport** solutions in **rural areas**.
(2) Privately organized **ridesharing services** can possibly close this gap.

**Main Research Question:**
*How has IS research addressed the future widespread of DSMS and what future research potentials can be derived for IS research?*

Herrenkind, B.; Harnischmacher, C.; Willnat, M.; Lembcke, T.B.; Villbrandt, Y. (2020): Digital Shared Mobility Services - A Literature Analysis and Avenues for IS-Related Future Research, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Study Design and Methodology

- **Structured, three-phase review of IS literature** in the DSMS field, following Webster and Watson (2002):

1. **Database search:** 57 publications found
2. **Literature coding** using eight categories
3. **Literature Analysis:** five identified clusters

Herrenkind, B.; Harnischmacher, C.; Willnat, M.; Lembcke, T.B.; Villbrandt, Y. (2020): Digital Shared Mobility Services - A Literature Analysis and Avenues for IS-Related Future Research, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Results and Discussion

Focus areas of current research:

- #1 Economic and organizational impacts
- #2 Design Science
- #3 Behavioral aspects

Overall: **DSMS needs more (comprehensive) attention** by IS researchers

Future research agenda:

- #1 User Acceptance in IS Organizations
- #2 Decision Support Systems for Vehicle Location
- #3 User Satisfaction and Acceptance Building
- #4 Combining Mobility Sharing and Intermodality
- #5 Shared Mobility and Autonomous Vehicles

Herrenkind, B.; Harnischmacher, C.; Willnat, M.; Lembcke, T.B.; Villbrandt, Y. (2020): Digital Shared Mobility Services - A Literature Analysis and Avenues for IS-Related Future Research, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Business Trip Ridesharing Services

# Status Quo and Research Question

**Key observations**

- **Increased demand for new mobility solutions** replacing private transport due to transport sector‘s impact on climate change
- Compared to private ridesharing, **adoption of Business Trip Ridesharing Services (BTRS) lags behind**
- BTRS lacks extrinsic motivation

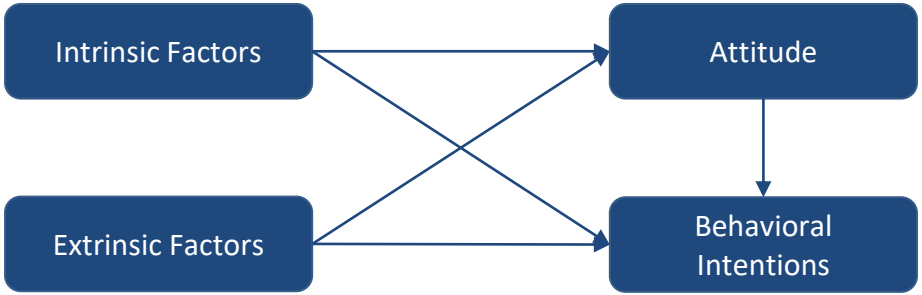
**Main Research Questions:**

*Do intrinsic / extrinsic motivation factors have an effect on the adoption of BTRS?*
*Does the formation of positive attitudes towards BTRS have an effect on its adoption?*

Herrenkind, B.; Lembcke, T.B.; Diederich, S.; Trang, S.; Kolbe, L. M. (2020): Let’s Travel the World Together: Toward an Understanding of Motivational Antecedents in Business Trip Ridesharing Services, in: Proceedings of Internationale Tagung Wirtschaftsinformatik.

# Study Design and Methodology

- The research questions were investigated based on a model of **Self-Determination Theory** using…




- Analysis using a **survey of 53 users** of a BTRS app in a German firm and employing Partial Least Squares

Herrenkind, B.; Lembcke, T.B.; Diederich, S.; Trang, S.; Kolbe, L. M. (2020): Let's Travel the World Together: Toward an Understanding of Motivational Antecedents in Business Trip Ridesharing Services, in: Proceedings of Internationale Tagung Wirtschaftsinformatik.

# Results and Discussion

**Key result**

All factors (except reputation) have positive significant effects on both attitude towards and intention to use BTRS: Sustainability, Enjoyment, Economic Benefits, Attitude

**Considerations when implementing**

1. Region-based
2. Promotion-based
3. Social value-based

**Future Research**

- Longitudinal Studies
- Qualitative Elements
- Gap: Intentions vs. Actions

Herrenkind, B.; Lembcke, T.B.; Diederich, S.; Trang, S.; Kolbe, L. M. (2020): Let's Travel the World Together: Toward an Understanding of Motivational Antecedents in Business Trip Ridesharing Services, in: Proceedings of Internationale Tagung Wirtschaftsinformatik.

# Digital Nudging and Sustainable Consumption

# Status Quo and Research Question

## Key observations

- **Dietary patterns** in western countries have **negative environmental impact**
- **Nudges** are being discussed as **policy option to foster more sustainable consumption**
- **Online-nudges in grocery purchases** are **heavily under-researched**

**Main Research Question:**
*To what extent does real-time spending feedback (RSF) in virtual shopping carts (VSC) affect consumers' sustainable consumption decisions?*

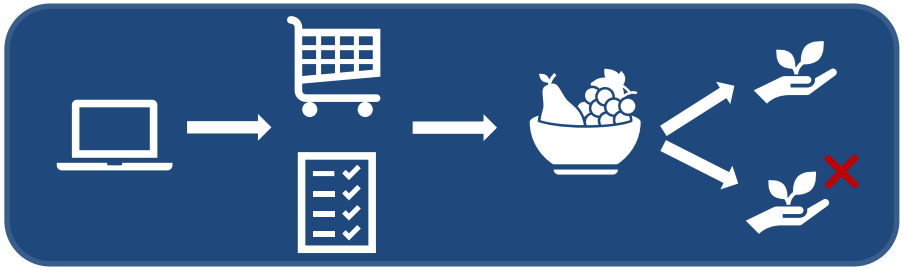
**Relevance for MOVE**

(1) Covers subject of **securing livelihoods** via use of online environments – relevant for **rural populations**.
(2) Online-nudges promoting sustainability **are relevant in the mobility context**

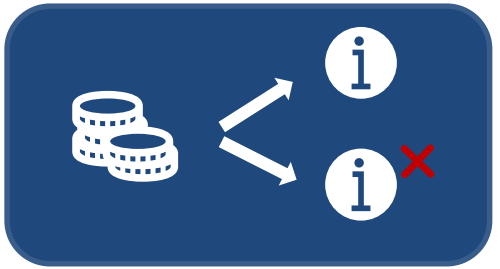
Lembcke, T.-B.; Engelbrecht, N.; Willnat, M.; Lichtenberg, S. (2020): Behavioral Design in Online Supermarkets: How Virtual Shopping Cart Functions Impact Sustainable Consumption, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Study Design and Methodology

- Computer-based experiment **simulating an online supermarket experience:**



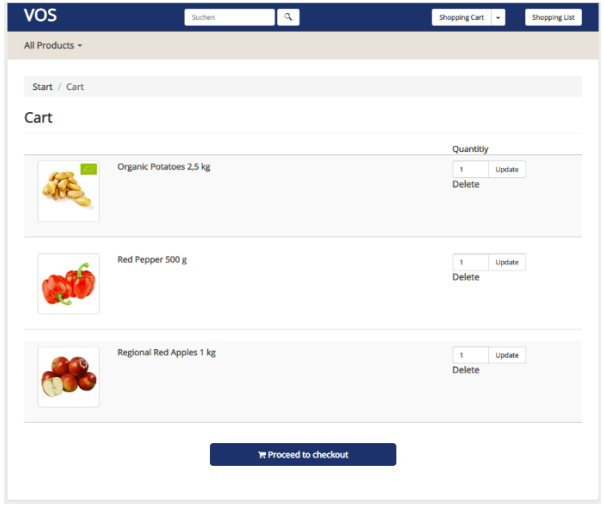
General Setup



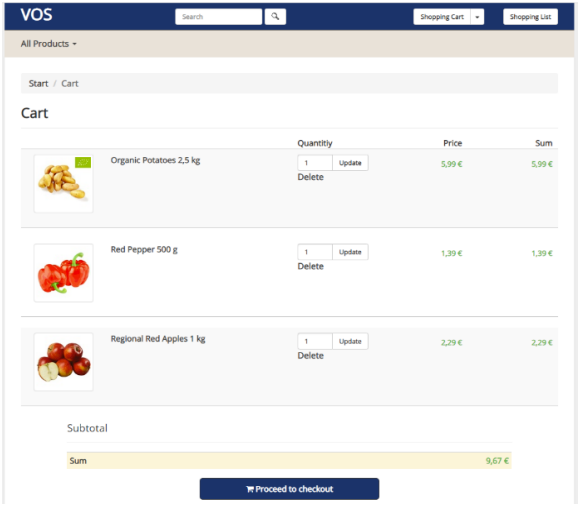
Treatments

Lembcke, T.-B.; Engelbrecht, N.; Willnat, M.; Lichtenberg, S. (2020): Behavioral Design in Online Supermarkets: How Virtual Shopping Cart Functions Impact Sustainable Consumption, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Study Design and Methodology




Baseline Treatment (no RSF)




Intervention Treatment (RSF via VSC)

Lembcke, T.-B.; Engelbrecht, N.; Willnat, M.; Lichtenberg, S. (2020): Behavioral Design in Online Supermarkets: How Virtual Shopping Cart Functions Impact Sustainable Consumption, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Results and Discussion

**Key results**

With nudge: less overspending, more sustainable consumption (especially for weak intention subjects)

Importantly: notable gap between intentions and actual behavior

**Main Limitation**

The decision-making process itself remains a „black box“ as only outcomes are observed

**Conclusion**

Potential of digital nudging to improve individuals’ decisions is highlighted, with **implications for mobility**

Lembcke, T.-B.; Engelbrecht, N.; Willnat, M.; Lichtenberg, S. (2020): Behavioral Design in Online Supermarkets: How Virtual Shopping Cart Functions Impact Sustainable Consumption, Proceedings of the Americas Conference on Information Systems (AMCIS), Salt Lake City, United States.

# Ridesharing Business Models

# Status Quo and Research Question

**Key observations**

- Car- and ridesharing are on the rise (collaborative consumption)
- **Numerous business models** exist
- But: **lack of common terminology / classification**

**Main Research Question:**
*What archetypical shared mobility business models prevail in the context of ridesharing?*

Lembcke, T.B.; Herrenkind, B.; Willnat, M.; Bührke, J.; Nastjuk, I. (2020): Driving Future Mobility by Shared Mobility: A Taxonomy of Ridesharing Business Models, Proceedings of the International Conference on Information Systems (ICIS), virtual conference. (cond. acc.)

# Study Design and Methodology

- **Three steps** to identify business model archetypes:

1. **Literature / Database search:** 61 providers found
2. **Taxonomy definition:** yielding 16 dimensions
3. **Cluster Analysis:** five relevant clusters

Lembcke, T.B.; Herrenkind, B.; Willnat, M.; Bührke, J.; Nastjuk, I. (2020): Driving Future Mobility by Shared Mobility: A Taxonomy of Ridesharing Business Models, Proceedings of the International Conference on Information Systems (ICIS), virtual conference. (cond. acc.)

# Results and Discussion

- Main result: updated ridesharing business model taxonomy based on **five clusters**
  - *Focus C2C:*

Short-Distance (Altruistic) C2C

Long-Distance C2C

First Gen (Browserbased) Platforms

  - *C2C and B2B: Second Gen (Mobile App-based)*
  - *B2C: Local On-Demand (Van) Ridesharing*

Lembcke, T.B.; Herrenkind, B.; Willnat, M.; Bührke, J.; Nastjuk, I. (2020): Driving Future Mobility by Shared Mobility: A Taxonomy of Ridesharing Business Models, Proceedings of the International Conference on Information Systems (ICIS), virtual conference. (cond. acc.)

# Mobility Need-Adaptive Housing Platforms

# Status Quo and Research Question

## Key observations

- **Increasing urbanization** and **lack of affordable housing**
- **Online housing platforms** support people in search of accomodation
- Shift to **commute time as the central filter option** in housing platforms

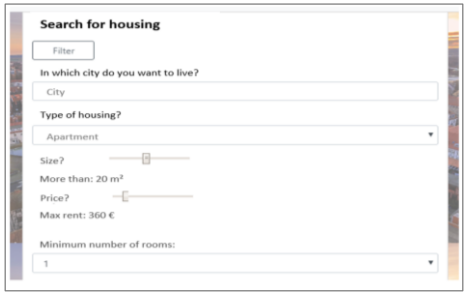
**Main Research Question:**
*Does tailoring a housing platform towards commuting-needs yield a benefit with respect to information quality and technology acceptance?*

**Relevance for MOVE**

(1) Housing markets are especially **competitive** in **university cities**.
(2) Student accomodation could **shift to rural areas** – given that the (mobility) infrastructure at hand allows for convenient commute.

# Study Design and Methodology

- Computer-based experiment using two treatments:




Control: City Search


Intervention: Commute-Time Search

- Scenario: Where would you want to live **as a student**?

# (Preliminary) Results and Discussion

**Key result**

Filtering by commute time rather than by city alone increases user acceptance and adoption through all four investigated categories:

1. Intention to use
2. Perc. usefulness
3. Perc. ease of use
4. Information quality

**Implication**

When designing online housing platforms, **providers must consider their user base's mobility needs**

# Communication of Medical Information

# Status Quo and Research Question

## Key observations

- Rural areas often **lack appropriate access to medical services**

  → scarce medical resources and longer distances: **bad coverage**

- **Minimizing** in-person patient-doctor **consultations is sustainable** in three ways:

Economically | Ecologically | Socially

**Main Research Question:**
*How can trustworthy medical information be communicated reliably and effectively such that physical contact between patients and care providers can be minimized?*

**Relevance for MOVE**

(1) Especially in rural regions with poor transportation access, traffic avoidance can be part of the solution

# Study Design and Methodology

- **Case Study**: Diffusion of hygiene instructions during COVID-19
- Based on **Media Richness Theory**, four treatments were implemented

# (Preliminary) Results and Discussion

**Key result**

Research in progress.

Preliminary evidence suggests that interactive, trustworthy information services can reduce mobility needs.

**Implications and future research**

Implications are to be determined.

Interplay of telemedicine use and mobility: reduction of private transport?

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