Location-Based Services in Tourism

An empirical analysis of usage behavior
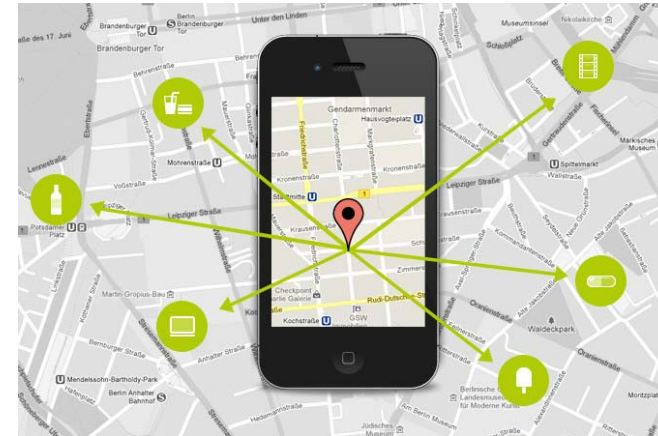
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Location-Based Services

- services provided by electronic communications technology (Turowski & Pousttchi 2004)
- "Services that are enhanced by and depend on information about a mobile device's position" (Unni & Harmon 2007; Jagoe 2003; Mitchell & Whitmore 2003)
  - →here understood as applications generating value through localization (Masters 2014; Ehlers & Rau 2015; Heinemann 2014).

- localization options:
  - GPS
  - mobile network
  - Wi-Fi / geo-fences
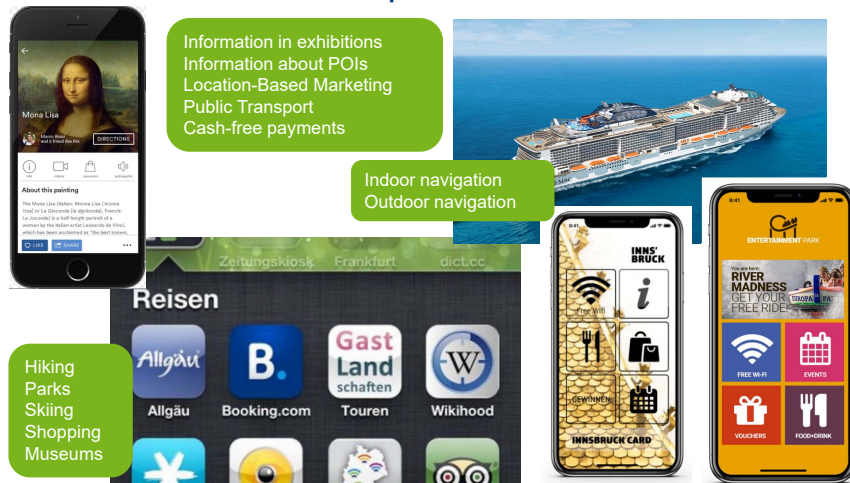 - beacons
  - RFID
  - NFC

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Why focus on Location-Based Services?

- general use of information and technology usage
  - increasing usage of mobile media (US: Lu 2017; Germany: Goldhammer et al. 2014)
  - comparably broad LBS usage (EU: EGNSSA 2017; Germany: cf. Lopez 2013).

- particularly in tourism / leisure management
  - tourists in a situation characterised by increased information and service needs (Link & Seidl 2008)
  - LBS have the potential to enhance the tourists' leisure experience (Kramer et al. 2009)

→ existing transition processes influencing tourism

LBS in Tourism - Examples

- Information in exhibitions
- Information about POIs
- Location-Based Marketing
- Public Transport
- Cash-free payments

- Indoor navigation
- Outdoor navigation

- Hiking
- Parks
- Skiing
- Shopping
- Museums

Research Object – LBS in Tourism

- considered to be promising services in the tourist industry (Egger & Jooss 2010, p. 21)

- state of research:
  – Switzerland – Beier/Aebli 2016
    ○ correlation between propensity of using internet on holidays and the propensity of using mobile apps
    ○ older tourists and foreign visitors use mobile apps less frequently

  – Austria – Frey et al. 2015
    ○ UTAUT 2: appropriate construct – very few significant influences
    ○ LBS in early phase, guests are not aware of possibilities
    ○ General high use of mobile devices

Technology Acceptance

- popular research approach: technology acceptance (Chuttur 2009)

- LBS: new technology (Bauer et al. 2008)
  – particularly dependant on users' acceptance (Hess et al. 2005)
  – acceptance as the key success factor (Ehlers & Rau 2017)

- Acceptance depends on several influence factors (Bauer et al. 2008; Xu & Gupta 2009)

- several different technology acceptance models (TRA, TAM, TAM2, C-TAM, UTAUT, UTAUT2)

Research Model

- "Unified Theory of Acceptance and Use of Technology" (UTAUT) is one of the most sophisticated. (Williams et al. 2015; Frey et al. 2015, p. 126)

- synthesizes eight prominent models
  – unified view of user acceptance (Venkatesh et al. 2003, p. 452 f.)
  – "foundation to guide future research in this area" (Venkatesh et al. 2003, p. 466)

- extended in 2012 → UTAUT2
  – focus on consumers instead of organisations (Venkatesh et al. 2012)

Slide 1

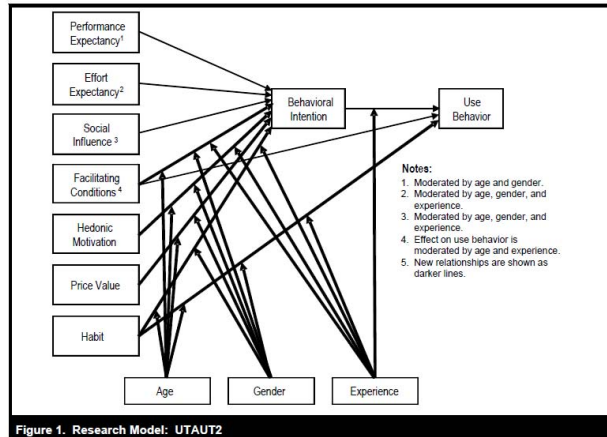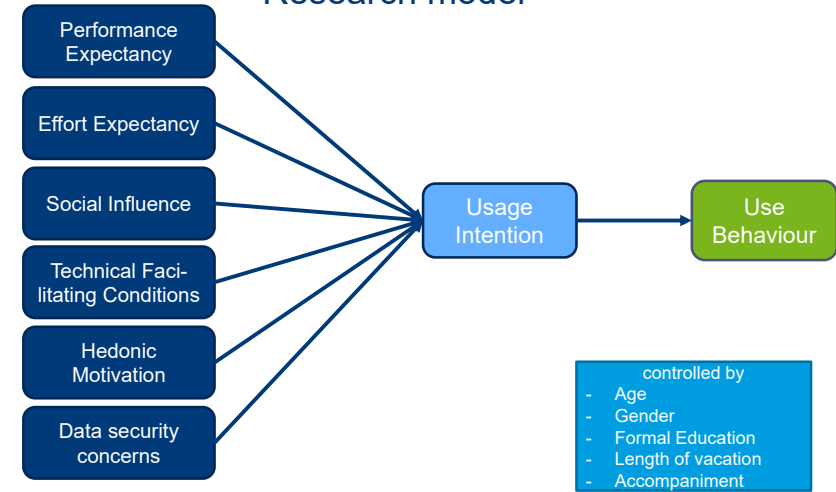# Technology Acceptance

UTAUT2 – the selected model for our approach

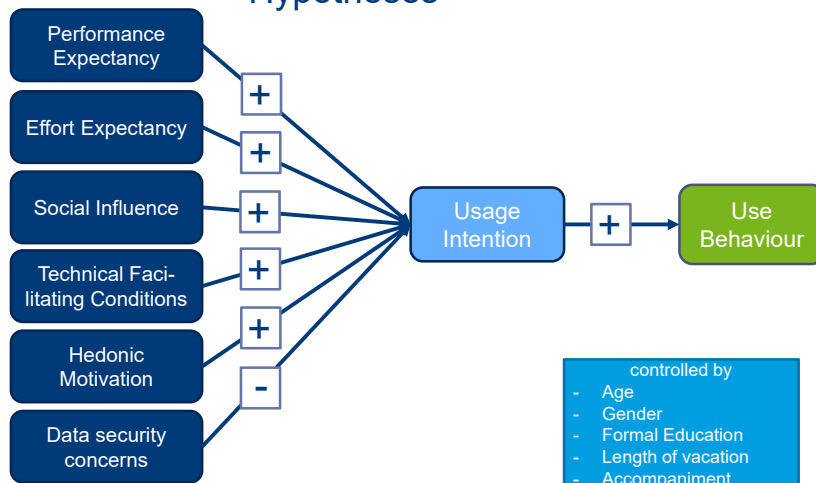Figure 1. Research Model: UTAUT2

Source: Venkatesh et al. 2011, p. 160

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Slide 2

Research model

- Performance Expectancy
- Effort Expectancy
- Social Influence
- Technical Facilitating Conditions
- Hedonic Motivation
- Data security concerns
- Usage Intention
- Use Behaviour

controlled by
- Age
- Gender
- Formal Education
- Length of vacation
- Accompaniment

Slide 3

Hypotheses

- Performance Expectancy +
- Effort Expectancy +
- Social Influence +
- Technical Facilitating Conditions +
- Hedonic Motivation +
- Data security concerns -
- Usage Intention + Use Behaviour

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Method

- quantitative survey
  - verifying deductive hypotheses

- UTAUT 2 – was already successfully used by other researchers

- passer-by interview
  - tourists filled out questionnaires
  - could ask for help if necessary (Scholl 2014, p. 49)
  - assisted, self-completed survey (Scholl 2014, p. 49)

- conducted in summer 2017

Slide 1

Method – location

- location of the survey: Greetsiel

  - located at the coast in the north of Germany
  - close to the Dutch border
  - known as typical East Frisian fishing village
  - 2016: 1 million day guests; 400.000 overnight stays

Slide 2

Method – Sample

- 133 participants
- 48% female
- average age: 41 (SD=14,2)
- formal education: miscellaneous (but most with a degree – 36,7%)

- length of stay in Greetsiel
  - 12 % daily visitors
  - 20% short vacation
  - 68% longer vacation (>3 days)
- own classification of vacation type
  - 3% activity holiday (interested in culture)
  - 2% activity holiday (interested in sports)
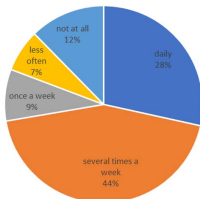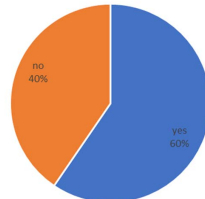 - 48% relaxing holiday
  - 47% mixed

Slide 3

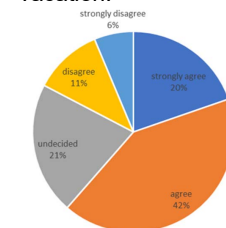# Results – Intention and Behaviour

"I am using LBS during this vacation."

"I used LBS during my last vacation."

"I plan to use LBS during my next vacation."

80% use LBS at least once a week
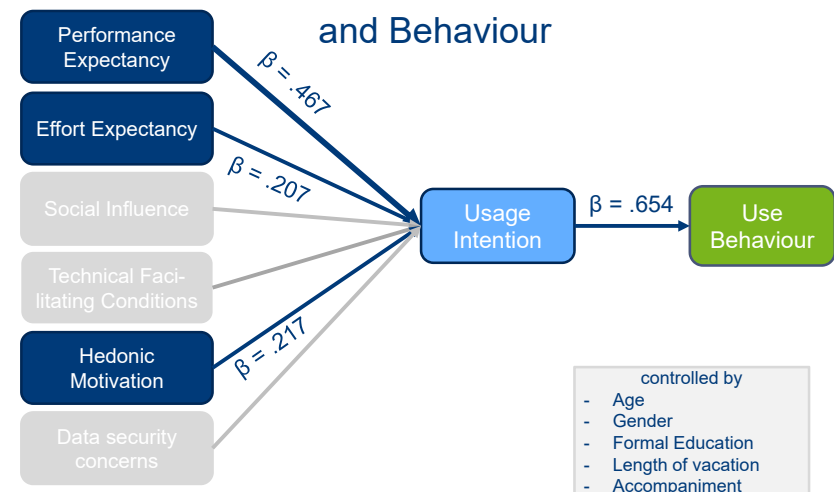*N=130, five step scale: (1 = daily, 5 =never)*

60% used LBS in prior vacation
N = 126

M = 2,43 (SD = 1,11)
N=127, five step scale (1 = strongly agree, 5 = strongly disagree)

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Results – Influence on Intention and Behaviour

Performance Expectancy — $\beta = .467$
Effort Expectancy — $\beta = .207$
Social Influence
Technical Facilitating Conditions
Hedonic Motivation — $\beta = .217$
Data security concerns

Usage Intention — $\beta = .654$ → Use Behaviour

controlled by
- Age
- Gender
- Formal Education
- Length of vacation
- Accompaniment

Results – Effects of Demographic and Other Variables

- comparison between different case groups:

- tourists under 30 years have a higher LBS usage intention than older tourists
- tourists who already used LBS before during a vacation have a higher LBS usage intention than those who haven't
- tourists who use LBS each day outside of their vacation have a significantly higher usage intention during vacations than those who don't

Discussion

- LBS usage behavior depends on usage intention

- Usage intention depends on three factors.
- Accordingly, LBS application must consider:
  - app must help facilitate tourist activities
  - app must be easy/user-friendly to use
  - using the app must be fun

- Demographic variables mostly irrelevant

Limitations

- Larger sample size preferable
- Self selective sample
  → representativeness (Tabachnik & Fidell 2013, p. 159)

- Challenge in ensuring proper definition of LBS and quality of usage

- Construct "*Social Influence*" indicates biased results
  → effects of social desirability (Stocké 2004, p. 303)

- Very general approach, actual acceptance can differ between different application, topics and publishers
- Acceptance is also influenced by the usability of an application, which is also very specific with each application.

Conclusion

- LBS usage behavior in tourism is primarily determined by how much the app is able to provide the situational high demand of information in a user-friendly and fun way.

- Further potential can be realized by addressing a young target group, that has already used LBS during and outside the holidays.

- Future applications might incorporate existing structures like Google Maps layers.
- Key to success might be aggregating, merging and tagging information.

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