Influencing factors on the acceptance of Advanced Rider Assistance Systems (ARAS)

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The problem

Index (2005=100) of motorcycle and moped fatalities compared with other modes of transport in the EU, 2005-2014


About the research project moTFas

• Identification of common motorcycle accident scenarios from the analysis of statistical and in-depth data bases
• Simulation of typical accidents with and without ARAS
• Data collection of the behaviour of the ARAS in different real life riding scenarios
• Determination of the acceptance/acceptability of selected ARAS
  – Mixed methods approach:
    • Focus groups to develop items
    • Survey amongst Austrian motor bikers (n=401)
Acceptance or acceptability?

- General Indicators
  - Background factors
  - Attitudes to driving behaviour and speeding
  - Traffic safety
  - Information and knowledge about the problem
  - Personal and social area
  - Responsibility awareness
  - Social norms
  - Problem perception

- System Specific Indicators
  - Perceived efficiency
  - Perceived effectiveness
  - Perceived usability
  - Perceived usefulness
  - Satisfaction
  - Equity
  - Affordability

Acceptance/ Acceptability

Source: Vlassenroot et al. (2005): Towards defining a unified concept for the acceptability of Intelligent Transport Systems (ITS)

ARAS under examination

- Blind spot monitoring
- Curve warning
- Forward collision warning
- Cornering ABS
- Traction control
- Autonomous emergency braking

ARAS under examination – which ones are already available?

- Blind spot monitoring
- Curve warning
- Forward collision warning
- Cornering ABS
- Traction control
- Autonomous emergency braking

The survey

- Online survey (n=401) conducted in winter 2017/2018
- Items about:
  - Risk-perception & risk-taking behaviour
  - Attitudes towards other road users
  - Social-demographic data
  - 9-10 items (with Likert-scale) for the evaluation of ARAS
Acceptance or acceptability?

Results: perceived effectiveness

- The system could prevent traffic accidents (n=401)
- Results: perceived usefulness

- I would like to have this system on my motor bike (n=401)
- Results: influencing factors

- Influence on the positive evaluation/acceptance of ARAS

<table>
<thead>
<tr>
<th>Influence</th>
<th>No (significant) influence</th>
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<tbody>
<tr>
<td>Experience with a system in passenger cars</td>
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<tr>
<td>Feel accidents and injuries</td>
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<tr>
<td>Positive view of assistance systems and technological innovations</td>
<td></td>
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<tr>
<td>Sex (1 low n for female riders)</td>
<td></td>
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<tr>
<td>Non-sportive riding style</td>
<td></td>
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<tr>
<td>Self-critical perception of the dangers of riding</td>
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<tr>
<td>Use of the motor bike for commuting (low n for commutators)</td>
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<tr>
<td>Year-round riding (4 seasons)</td>
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<tr>
<td>Mixage</td>
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</tbody>
</table>
Acceptance scores

Acceptance scores of examined ARAS

Maximum achievable score = 100

48 51 71 60 34 46 010 20 30 40 50 60 70 80

Blind-spot monitoring
Curve warning
Forward collision warning
Cornering ABS
Traction control
AEB

Conclusion

Acceptance is higher for:
- currently available systems
- systems currently available in passenger cars
- systems that activate in emergencies only

Riders’ individual attitudes towards technology and their risk-taking behaviour/riding style matter a lot, too!

Thank you for your attention!
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