TRUCK DRIVERS' PROFILING BASED ON ATTITUDES TOWARDS AUTOMATED PLATOONING TECHNOLOGY

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Keywords: Truck platooning, Automated trucks, Technology acceptance, Survey, Freight transport

Subject area: Automated Vehicle Technology

Category: Research Projects

Abstract: As automation continues to reshape industries, its integration into transportation is transforming not only operational processes but also the roles and responsibilities of workers. In the freight sector, truck platooning—where multiple trucks travel in close formation, coordinated by automation—has the potential to enhance efficiency, reduce emissions, and improve safety. However, this technological shift introduces new challenges, particularly for drivers who will face changes in their work tasks, increased supervision, and the emergence of new risks. Understanding drivers' perceptions of these changes, their acceptance of automation, and how they adapt to new responsibilities is crucial for successfully transitioning to automated freight transport systems.

To investigate these factors, we developed a survey based on the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to evaluate drivers' attitudes toward automation and truck platooning. Data was collected from 78 truck drivers (aged 25–63) on sociodemographic characteristics, professional experience, knowledge of advanced driver-assistance systems (ADAS), and attitudes toward automated trucks. The survey analysis began with descriptive statistics to summarize the data. Preliminary results show drivers are receptive to new technologies and consider truck platooning easy to use. They recognize the potential environmental benefits but have mixed opinions on other advantages, like reducing traffic congestion.

A Principal Component Analysis (PCA) is being applied to uncover the underlying dimensions of drivers' acceptance. The first component of each identified theme shows a strong positive correlation with all the questions in that theme, indicating an apparent, unified factor that influences drivers' perceptions of specific aspects of truck platooning or automation. These themes include (i) experience and social influence, (ii) perceptions of truck platooning (ease of use, usefulness, and risks), and (iii) behavioral intention to adopt the technology. These early results help highlight the main factors shaping drivers' attitudes, which will be further explored, in time for the conference, through cluster analysis to segment drivers into distinct profiles based on their acceptance and intentions to adopt truck platooning.

This study advances our understanding of how drivers perceive and adapt to truck platooning. The findings will provide valuable insights into the factors influencing drivers' acceptance of this technology, which will be essential for optimizing its integration into the freight transport sector.

Acknowledgments: This work is financially supported by the Fundação para a Ciência e a Tecnologia, I.P. (FCT, Funder ID = 50110000187) under the project with DOI 10.54499/PTDC/ECI-TRA/4672/2020, the grant with DOI 10.54499/CEECINST/00010/2021/CP1770/CT0003, and the Base Funding allocated to CITTA - Research Centre for Territory, Transports and Environment (DOI 10.54499/UIDB/04427/2020).

Date: March 2021 – March 2025