



Towards inclusive and equitable CCAM in public transport – Implications for the development of future mobility concepts

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Introduction: Reflected by numerous pilot trials around the globe (e.g., driverless taxis pilot in San Francisco), automated mobility is increasingly evolving towards high-level automation. A high potential for connected, cooperated, and automated mobility (CCAM) is seen in the field of public transport, offering the chance to improve service quality and inclusiveness, especially from the perspective of people with mobility challenges. To clarify the needs and requirements of these groups concerning CCAM, e.g., the Elderly, People living in rural areas, or People with physical disabilities, is one of the aims of the SINFONICA project (<https://sinfonica.eu>) in the context of which the presented survey study was conducted. As a first step, the presented survey study aims to analyze the user factors that affect the future deployment of CCAM. In this regard, four factors have been discussed as prerequisites to achieving equity in public transport: availability, accessibility, affordability, and acceptability. While availability describes having transport options nearby that also operate when the users require it, accessibility includes that the transport vehicle itself, but also the related service characteristics are free of any physical, skill-, or equipment-based barriers, which also includes, for example, that the user does not need to be a digital native to buy a ticket. Affordability is related to pricing, meaning reasonable ticket prices and transparent and easy-to-find pricing information, while acceptability reflects the requirements of convenience, safety, comfort, and necessary assistance. The importance of these four factors depends on the user's (e.g., age, knowledge, skill, disabilities) and situational characteristics (e.g., vehicle ownership, trip purpose, weather conditions). Following the theory of planned behavior, fulfilling these four requirement/ needs factors with the CCAM service attributes will lead to actual and, subsequently, perceived behavioral control. This, in turn, influences the user's attitude, which, together with social norms and habits, impacts the intention to use and, ultimately, the use itself.

Aim: The main objective of the presented study is to describe and compare the requirements, attitudes, and intention to use regarding CCAM for people with (i.e., People living in rural areas, Digitally non-connected people, People with a migration background) and without mobility challenges.

Method: The basis for our analysis is the data from an EU-wide online survey about users' needs toward CCAM services, which is currently running and will end in the first week of May. The survey consists of four parts. The first part contains questions about the respondents' current use of transport (e.g., frequency of use for different means of transport, trip purposes). In the second part, respondents were required to make ratings on different requirements about



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availability, accessibility, affordability, and acceptability towards future CCAM public transport concepts. The third part focuses on concepts relevant to CCAM adoption, like trust, attitudes, social norms, intention, and habit. The survey ends with a section on sociodemographics and mobility challenges. The survey was designed and hosted using Sosci Survey and is accessible from March 14th, 2024 in English, German, Dutch, Greek, Italian, Spanish, Polish, and French. The preliminary proportion of the groups considered in relation to the total sample is 7% People with mobility impairments, 5% Digitally non-connected, and 9% People living in rural areas.

Results: The data collection is still ongoing. Currently, $N = 3.107$ data sets have been completed by participants from seventeen EU member states and the United Kingdom. Besides presenting the descriptive data, inferential statistical comparisons are planned for the different groups concerning availability, accessibility, affordability, acceptability, attitudes, and intentions related to CCAM services. The data analysis will consider the intercorrelations of people with multiple characteristics regarding mobility challenges.

Discussion and Conclusions: The results of this study will provide operational and policy recommendations for taking into account the users' needs when designing future CCAM services to achieve greater equity in public transport. The results will guide stakeholders like transport providers, local city councils, and CCAM manufacturers in considering the needs of people with mobility challenges.

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