

EDITORIAL

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Mobility as what?

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From the humble beginning of five articles in 2015 to the around 200 articles each year in 2020–2023 [33], “Mobility as a Service” (i.e., MaaS) research literature has rapidly broadened. The International Conference on Mobility as a Service (ICoMaaS) has provided a platform to discuss MaaS in 2017 [19] and 2019 [20]. Selected articles presented at the 3rd ICoMaaS in 2022 in Tampere, Finland, are included in this topical collection along with additional submissions through an open call.

MaaS research literature is thriving, while the MaaS business, at least the ‘level 3’ bundling of mobility services integrated into a single platform [35], is struggling. However, “MaaS is happening without necessarily being called MaaS”, says Sampo Hietanen, the former CEO of MaaS Global [11], as micromobility services are integrated into ride-hailing services. The MaaS ecosystem and business models are evolving and the data providers, transport service providers, customers, regulators and MaaS orchestrators are searching for their roles [32]. In addition, the quest for financially viable business models [10] and added value [9] is ongoing.

1 MaaS as the second car?

One of the earliest reasons for promoting MaaS was the possibility to reduce private car ownership [36]. However, several studies [2, 13, 38] have highlighted that MaaS should be regarded as a complement of private car use rather than a substitution. In this collection, Smith et al. [34] agree that multi-modal travelers are likely

early adopters of MaaS and MaaS can be positioned as a competitor to the second car. However, Smith et al. (2023) also highlighted that many participants of their trial struggled with making the service work for them. Furthermore, there were no participants with disabilities, revealing the limitations of MaaS as previously highlighted by Pangbourne et al. [29].

2 Mobility as a feature?

While public transport has often been seen as the backbone of MaaS [1], the findings by Hasselwander & Bigotte [7] on MaaS in the Global South, highlight the importance of informal transport and the integration of mobility with retail, food, entertainment, tourist services, and other non-transport services. As Ho & Tirachini [12] highlight, MaaS could be a catalyst for a transport pricing reform in countries with informal public transport and a scarcity of public funds, as one of the features available through “local super apps” [8].

3 (How) Will MaaS lead to better services?

Despite a positive attitude towards MaaS, the willingness to pay is not at the level that people pay for their current mobility [16, 21]. Similarly, people tend to have a positive attitude towards automated vehicles (AVs), but the services are not meeting the needs of people due to low speed and availability [3, 22]. In general, potential users of MaaS and AVs are likely to be male and younger than non-users [5, 16]. In contrast, Barthelmes et al. [3] investigate if wider user potential can be found by integrating demand-based AVs with MaaS. Their findings indicate that mobility-impaired people expect to use demand-based automated door-to-door service offerings, but AVs need higher travel speeds and more flexibility to provide transfers to public transport and attract non-users.

Demand responsive or flexible transport is available in both urban and rural areas in some countries, but some

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countries lack such services in rural regions [27]. Thus, mobility gaps and scarce services need to be identified, and MaaS has a strong potential to enable better accessibility to remote locations [30], which can help to address transport poverty [23].

4 What do MaaS platforms need to accomplish?

Cisterna et al. [4] and Kraus et al. [15] provide an overarching setting for this topical collection by reviewing the MaaS ecosystem modelling framework and quantifying the value created in a MaaS ecosystem. Cisterna's et al. [4] review shows the large variety and interaction of socio-economic, mobility habits and MaaS service-related factors influencing MaaS adoption. These complex interactions require agent-based, multi-modal, multi-actor modelling approach, such as proposed by Kamargianni et al. [14]. In addition, Kraus et al. [15] show that joint value cannot be created in MaaS ecosystems under current circumstances. Hence, MaaS platforms need to be subsidized, provide additional value to customers, create new revenue streams or, expand to wider customer groups or regions.

5 What do public sector actors need to accomplish?

The new mobility services pose a dilemma for the public sector. New services such as e-scooters have encountered varying citizen, policy and research response [39]. In this collection, [17] show that new mobility service providers' business models are influenced by legitimization and local policy instruments. The research emphasizes the importance of learning by doing, policy mixes, and purpose-driven collaboration between service providers, users and the public sector. In particular, purpose-driven collaboration may benefit from using the Thematic map and Practical framework for implementing MaaS, which are tools developed by Milne et al. [27]. Besides those collaborative aspects, one clear issue that the public sector needs to address on the EU level is mobility services providers' liability in case of disruptions [30].

6 Future research pathways

The articles in this topical collection provide answers to some of the research gaps, and open new research pathways. First, comparative analyses on the feasibility of different types of AV services should be carried out to identify the most potential user groups. Such comparative analyses are needed to understand the effects of various policy mixes related to emerging mobility services. The accumulated evidence of the limitations of various MaaS trials highlight that there is a need for longer-term experiences and panel data analysis. In addition, Mobility as a Feature (MaaF) [9] opens a variety of research needs,

where Global North may learn from the Global South, while the digitalization of informal transport in the Global South needs further research. Moreover, introducing new services and approaches such as MaaF and AVs to mobility services also requires further research on developing MaaS modelling, possibly based on agent-based modelling.

Besides these future research aspects, this collection and most of the current MaaS related literature must recognize one important lesson from social science and humanities—technology has not only ethical but ultimately moral questions [18], especially when we think about governance questions. On the one hand, this requires further academic discussion on what is mobility in its essence, as there are other already existing and competing assumptions, such as mobility as a right [6, 24] or mobility as commoning [28]. On the other hand, this requires further research into methods for responsible innovation through a higher level of democratization, as already highlighted in relation to MaaS [25, 26] and AVs [37]. Finally, these and other future efforts will require a much greater engagement with social science and humanities concepts and methods [31].

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