Researchers demonstrate advantages of human-machine teams for truck transportation

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The use of artificial intelligence (AI) is becoming more common in many branches of industry and online retailing. Traditional lines of

work, such as transport logistics and driving, are developing in a similar direction although mainly out of public view. Scientists at the University of Göttingen have now investigated how efficient the use of AI can be in the commercial management of trucks. Their answer: the best option is an intelligent combination of human decision-making and AI applications. The study was published in the *International Journal of Logistics Management.*

"As has happened in the private sector, digital applications—as well as machine learning, a kind of AI—are increasingly permeating operations and processes in the transport and logistics sector," explains Professor Matthias Klumpp from the Faculty of Economics. "The question in the commercial sector, however, is whether or not this contributes to achieving goals and efficiency in companies."

To answer this question, the researchers compared the work efficiency of truck drivers in relation to their use of AI applications such as dynamic real-time navigation systems, cruise control and automated gear-shifting based on speed and topography and others. Looking at retail trade delivery by truck, they studied three comparison groups: the first drove exclusively following human decision-making patterns; the second used a combination of human and machine; and the third relied exclusively on fully automated decisions.

The researchers from the Production and Logistics Research Group concluded that an intelligent combination of human work and decision-making capabilities with AI applications promises the highest transport and driving efficiency: "On average, the second group achieved the most efficient transport trips, with the fewest interventions and deviations from the optimal path," the authors said. "Clearly, neither a purely human decision-making structure nor a fully automated driving system can promise to meet current logistics requirements."

The scientists therefore deduce that despite the progress of AI in the field of transportation by truck, human experience and decision-making capabilities will still be necessary in the longer term. "However, extensive training and qualification needs will occur by working with AI applications, especially for simple logistics activities," the authors conclude. "Technology and AI innovations are therefore not a question for management alone. In particular, efficiency and competitive advantages can be achieved through their application in operational transport."

Provided by University of Göttingen