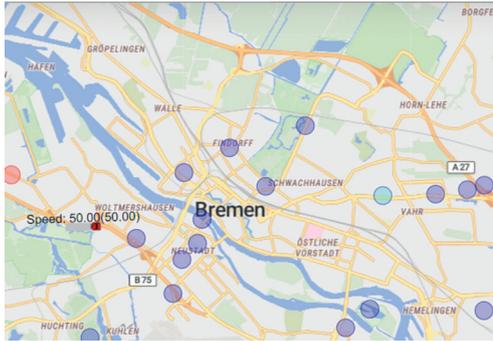


Customer-specific Sustainable Logistics

Development of a methodology for customer-specific design and evaluation of sustainable consumer logistics



Left: Section of the simulation model for customised delivery, Source: BIBA GmbH | Above: Aspects of online order delivery, Source: © Golden Sikorka/adobe stock.com

Motivation

Consumer logistics is becoming increasingly important due to online retailing, especially in the so-called »last mile« area. Food logistics is particularly challenging, as this often involves time-critical transports. This creates a dilemma for end customers, where the convenience of ordering online, including delivery, is offset by the resulting CO₂ emissions. However, there is no way to show end customers the direct and indirect effects of their actions when ordering, so a conscious choice of sustainable options is not yet possible.

Approach

Within the framework of the socio-scientific approach, end customers were questioned about their individual shopping behaviour so that insight could be gained, for example, about the frequency of food purchases or the number of people in a household. These figures were then transferred to the simulation model developed by BIBA. The simulation model is based on an engineering approach depicting the entire logistical process from

ordering to transport to handing the goods to the customer at home or in the supermarket.

Results

Based on the surveys, different scenarios were simulated for the city of Bremen. The results of the surveys and the simulations show that customers individually tend to avoid CO₂ emissions with different options. On the other hand, it could be demonstrated that supposedly worse logistics options with higher CO₂ emissions lose their negative influences with optimal logistical planning.

Publications

Trapp M., Luttermann S., Rippel D., Kotzab H., Freitag M. (2021): Modeling Individualized Sustainable Last Mile Logistics. In: Freitag, M.; Kotzab, H.; Megow, N. (eds.): Dynamics in Logistics. Springer, Cham, S. 277-293, doi.org/10.1007/978-3-030-88662-2_13.

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The Bremen Research Cluster for Dynamics in Logistics (LogDynamics), established in 1996, offers interdisciplinary research in logistics and a corresponding structured and international doctoral programme. LogDynamics is a cooperating network of research groups from five faculties of the University of Bremen: Physics/Electrical Engineering, Mathematics/Computer Science, Production Engineering, Law, and Business Studies/Economics. Associated partners are: BIBA – Bremer Institut für Produktion und Logistik, Institute of Shipping Economics and Logistics (ISL) as well as Jacobs University Bremen. Spokesmen are:

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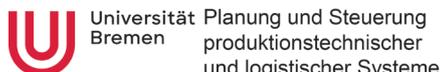
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