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FLEXIBLE URBAN DELIVERY AND ON-DEMAND ECONOMY: THE CASE OF A MEDIUM-SIZED CITY

Abstract: The paradigms of the on-demand economy and e-commerce let emerge new business models, where only companies that adopt a customer-centric view and build intelligent enterprise-level platforms will succeed in increasing overall satisfaction, loyalty, and trust. One of the main effects of this process is that the last-mile operations must be completed within a short time interval according to the customers' choices disregarding the actual cost. Indeed, customers have become increasingly connected, informed and empowered, continually demanding more choice and flexibility in delivery options. Consequently, they are constantly raising their expectations for fast (usually within very limited timeslots as 2 hours) and cheap deliveries of purchased goods. We focus on the decision-maker adopting a satellite and distributing from there through private or, more often, contracted vehicles, to fulfill the demand of orders. In particular, he can adopt mixed-fleet composed by traditional vehicles, low-environmental vehicles (i.e., electric vans and cargo bikes) or crowd-sources unprofessional drivers. We model this problem by proposing a new variant of the bin packing problem, namely the Variable Size Cost Bin Packing Problem with Time-Dependent cost, in which we consider a generalized objective function considering both the cost of the warehouse and its operations and the delivery cost represented by the routing costs at a specific time slot combined with the express delivery of an order. We present the results from a case study on the city of Turin. We draw practical insights on the delivery in urban areas while taking into account the effects of the on-demand economy, and e-commerce in particular. We also show how our approach can guide the decision-maker strategies to reduce the costs and to better control the whole process.

MERCREDI / WEDNESDAY
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Organisateur / Organizer
Teodor Gabriel Crainic