



Joint Seminar CIRRELT, MobilOpt and Canada research chair in integrated logistics

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Faculté de Business Administration
MobilOpt: Mobility Optimization



Canada research chair
in integrated logistics

EXPLOITING IN-STORE CUSTOMERS AS OCCASIONAL DRIVERS IN LAST MILE DELIVERY



Abstract: E-commerce has become increasingly popular in the last decade and the pandemic contributes to further boost its popularity. While e-commerce giants, already have their established efficient distribution network, medium-sized retailers face very high fulfillment costs. This engendered the concept of crowdshipping, which is an innovative delivery system in which in-store purchasers are exploited as occasional drivers (ODs) for delivering orders to customers, on their way back home. This allows to better handle high peak demands, strongly reduce costs for the company, who does not have to pay fixed costs for drivers' contracts, but only pay ODs when they are needed. Moreover, ODs must generally perform small detours from their original itinerary, which results into an improvement of the sustainability of the delivery system. However, ODs availability is hard to predict and suffers from a large variability. Therefore, a mixed system combining the company owned fleet and ODs is the most viable and convenient option. In this talk we will discuss how to generate attractive bundles for ODs, and how these generation techniques must be adapted to handle cases in which delivery time windows are agreed with the customers. Then, we will analyze cases in which ODs are not known in advance. This setting yields to a multi-stage stochastic optimization problem, for which effective orders clearance policies are provided. Mitigation strategies for hedging against ODs absenteeism will be presented, and finally, hints about the exploitation of ODs also for mid-haul delivery will be discussed. Mixed integer programming models and effective heuristics techniques will be presented for each analyzed setting, their performance, tested on a variety of instances, will be discussed and managerial insights will be derived.

Short biography: Simona Mancini is Associate Professor of Operations Research at the University of Palermo since 2022 and external lecturer in Operations Management and Logistics at the University of Klagenfurt since 2021. Since 2022, she serves as Associate Editor of Expert Systems with Applications. She is member of scientific committee of the conferences TRISTAN 2022 and TRISTAN 2025. She is author of more than 40 papers on scientific journals and more than 50 presentations at international conferences. Her research includes optimization of logistics systems with a particular focus on last-mile delivery, combinatorial optimization and matheuristics.

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Meeting ID: 641 2295 0920 Passcode: 820127

MARDI / TUESDAY
30 AVRIL / APRIL 30TH
10h00

Université Laval
Pavillon Palasis-Prince
Salle / Room 2327

Ouvert à tous / Open to all
Café et viennoiseries

Responsable / Organizer:
Leandro Coelho

