

Logistics Hub Location and Scheduling Model for Urban Last-Mile Deliveries

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Abstract : Logistics play a vital role in the prosperity of today's cities, but current urban logistics practices are proving problematic, causing negative effects such as traffic congestion and environmental impacts. This paper proposes an alternative urban logistics system, leasing hubs inside cities for designated time intervals, and using handcarts for last-mile deliveries. A mathematical model for selecting the locations of hubs and allocating customers, while also scheduling the optimal times during the day for leasing hubs is developed. The proposed model is compared to current delivery methods requiring door-to-door truck deliveries. It is shown that truck traveled distances decrease by more than 60%. In addition, analysis shows that in certain conditions the approach can be economically competitive and successfully applied to address real problems.

Keywords : hub location, last-mile, logistics, optimization

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