Optimising the Capacity of Parcel Lockers

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Objective Function
Minimize capital & operating costs (incl. delivery failure)

Constraints
Levels of service & maximum duration for pickups

Decision Variables
Capacity (# lockers) & number of deliveries per day
The effect of capacity on logistics costs
Parcel collection patterns
Sensitivity analysis on different parcel pick up days

Collection rate (a-b-c: a is proportion of parcels collected in first 24 hours, b is proportion of parcels collected in second 24 hours, c is proportion of parcels not collected in 48 hours)
Cost and capacity comparison on different collection patterns & number of deliveries
Future Work

Stochastic demand levels & pickup times

Network of locker stations

Shared use of lockers by multiple logistics organisations

Multiple size lockers for handling different sized goods
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