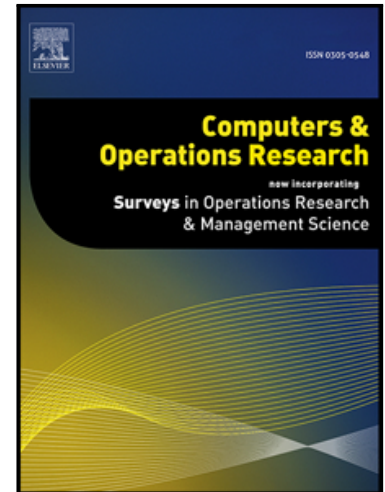


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Vehicle Routing and Appointment Scheduling with Team Assignment
for Home Services

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Highlights

- We propose a relevant new problem which originates from the scheduling of tasks in home services (a service provider with a set of teams to service a set of geographically distributed customers), the RASTA problem.
- We develop an integrated model for the RASTA problem concerning: (1) team assignment, (2) routing, and (3) appointment scheduling, when the service times are random.
- A heuristic algorithm based on Tabu Search (TS) is proposed to solve practical-size problem in reasonable time. It employs TS to improve the initial feasible solution obtained by a modified parallel savings (MPS) algorithm.
- We experimentally demonstrate the effectiveness and efficiency of the TS-based heuristic algorithm. It is showed that the algorithm can produce optimal or near-optimal solution for the problem and it significantly outperforms the approach that separately optimizes assignment, routing, and appointment scheduling.
- Computational experiments show that considering the randomness of service times is significant and jointly considering the decisions of team assignment, routing, and appointment scheduling is beneficial.

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