

Last-mile delivery optimization considering the demand of market distribution methods: A case studies using Adaptive Large Neighborhood Search algorithm

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ABSTRACT

Based on the current situation and problems of transportation "last mile" transportation distribution, this paper establishes a path optimization model based on user distribution methods from the perspective of market preference for transportation distribution methods, designs an Adaptive Large Neighborhood Search (ALNS) algorithm, and builds a user portrait based on the solution algorithm and the construction method. Based on the solution algorithm and the user portrait construction method, the solution scenario is established, and the distribution route and transportation distribution method are planned based on five real location data. Through the analysis of the solution scenarios, it can be obtained that after the optimization of the model, the transportation distribution cost of enterprises can be reduced, and the satisfaction of the transportation distribution service quality can be improved. The higher the complaint cost, the lower the total transportation and distribution cost, and the higher the satisfaction rate; the higher the time window penalty cost, the higher the total distribution cost, and the lower the satisfaction rate. Through several model comparisons, it is found that the optimized model has obvious advantages in transportation cost and good performance in transportation service satisfaction. To further strengthen the promotion and application of the distribution path optimization model, countermeasures are proposed in three aspects: establishing a unified end transportation information service platform, increasing the investment in end transportation path optimization, and strengthening the formulation of supporting policies to realize the optimization of end distribution services.

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