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End-of-line delivery vehicle routing optimization based on large-scale neighbourhood search algorithms considering customer-consumer delivery location preferences

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ABSTRACT

Logistics is an important guarantee for economic and social development. Among the various aspects of logistics, the urban logistics end distribution link, which involves the direct connection between distribution personnel and customers, has a direct impact on customers' sense of experience and satisfaction with logistics services. At present, there are unscientific and unreasonable selection methods for logistics end distribution paths, often based on the subjective experience of distribution personnel, which often results in a mismatch between distribution paths and distribution needs, affecting market demand while further increasing the distribution costs of enterprises. Therefore, based on the characteristics of customer-consumers, this paper considers that consumers can select multiple receiving addresses, and each address has a corresponding time window limit. This paper finds that it needs to spend a lot of costs for the enterprise to improve the service level of distribution, and the enterprise can save the cost from time window, as well as obtain the better distribution time by using alternative addresses through the verification and analysis of an example. Based on the above analysis, this paper proposes the urban logistics terminal distribution path optimization path based on large-scale neighbourhood search algorithm, which can promote the further matching between logistics distribution enterprises and customer needs, so as to improve the probability of consumers receiving goods in time as well as reduce the cost of enterprises.

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Optimizacija končne dostave na podlagi algoritma iskanja po veliki soseski z upoštevanjem preferenčne lokacije dostave stranke – potrošnika

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POVZETEK

Logistika je pomembno zagotovilo gospodarskega in družbenega razvoja. Med različnimi vidiki logistike ima končna distribucijska povezava v urbanem okolju, ki vključuje neposredno povezavo med distribucijskim osebjem in strankami, neposreden vpliv na izkušnjo in zadovoljstvo strank z logističnimi storitvami. Trenutno obstajajo neznanstvene in nerazumne metode za izbiro končne dostavne poti, ki pogosto temeljijo na subjektivnih izkušnjah distribucijskega osebja. To povzroči neusklajenost med distribucijskimi potmi in potrebami, kar negativno vpliva na povpraševanje, hkrati pa dodatno povečuje distribucijske stroške podjetij. Zato ta prispevek na podlagi značilnosti strank – potrošnikov predlaga, da potrošniki izberejo več prevzemnih naslovov, vsak naslov pa ima ustrezno omejitev časovnega okna. Ugotavljamo, da mora podjetje vložiti veliko sredstev za izboljšanje ravni storitve distribucije, da lahko podjetje prihrani s pomočjo časovnega okna in da lahko podjetje pridobi boljši čas za dostavo z uporabo alternativnih naslovov. Na podlagi zgornje analize predlagamo optimizacijo distribucijske poti v urbanem okolju, ki temelji na algoritmu iskanja po veliki soseski, ki lahko poveča ujemanje med cilji distribucijskih podjetij in potrebami strank, s čimer se izboljša verjetnost, da bodo potrošniki prejeli blago pravočasno in se bodo zmanjšali stroški podjetij.

PODATKI O ČLANKU

Ključne besede:
Distribucija;
Usmerjanje vozil;
Optimizacija;
Optimizacija poti;
Konec poti;
Algoritem iskanja po veliki soseski

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