車輛途程含取貨問題解法之研究

徐俊誠、吳泰熙

E-mail: 9015668@mail.dyu.edu.tw

摘 要

本研究主要針對傳統車輛途程含回程取貨問題(VRPB)加以研究與改良。傳統VRPB主要是將服務的顧客群分為二類，第一類為將貨物送達顧客（LINEHAULS），第二類為回程取貨顧客（BACKHAULS），其構想是利用車輛在送貨途中順便回程取貨。由於傳統型的VRPB並不允許一個需求點同時包含送貨與取貨，一般都是將取貨點放在送貨點之後處理。如此一來，可以省去貨物空間排列的問題，但對於路線行駛的距離與所需車輛數勢必會增加，此類需求與假設明顯與台灣某些產業的貨物運送實況不合。本研究基於此想法，藉由數學模式的修改，來達到同一需求點可以同時處理送貨與取貨顧客，並將取貨需求點拜訪的順序需放置送貨需求點的限制予以放寬。換言之，改良後的演算法可依問題的要求，去拜訪不同順序的需求點。再者，藉由時窗限制(TIMES WINDOWS)來提升服務品質也為時下研究者所重視，因此本研究將VRPB與服務時窗結合，此一構想，應可更接近實務現況。 由於VRP為一個NP-HARD問題，當要處理規模較大問題時，所耗費的時間，呈指數倍成長。當問題內容包含取貨問題及時窗限制，將更顯複雜難解。所以本研究將根據題意分別利用模擬退火法建構啟發式演算法，並以國際網路例題做測試，冀能在時間與效率上求得平衡。

關鍵詞 : 車輛途程含回程取貨問題、考量時窗限制之車輛途程含取貨問題、模擬退火法

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