A Distribution Management Model Integrating Distribution Requirements Planning & Vehicle Routin

游世民、吳泰熙

E-mail: 8701408@mail.dyu.edu.tw

ABSTRACT

There are mainly three levels in logistic systems, i.e., plant, distribution center, and retailer, respectively. Distribution Requirements/Resource Planning (DRP I/II), adopting the basic concept from MRP, integrates each and every function of the entire logistic systems. Its primary concern focuses on the minimization of the total logistic cost including ordering, inventory, in-transit inventory, and transportation cost. For retailers, DRP can help maintain the inventory control. The distribution center collects the demand information from its retailer and car fleet would be sent out to satisfy retailers* demand. The routingplan can be obtained by VRP (Vehicle Routing Problem) algorithm. In the past, most of the research did not consider transportation cost in the distribution management. In this research, a integrated mathematicalmodel is built, where the transportation cost is included. In addition, routing information can also be generated for the operational purpose. The basic purpose of this research is to verify that a planning modelusing DRP and then VRP would incur higher cost than a model integrating both DRP and VRP in one mathematical model. A real example is used and the results agrees with our assumption.

Keywords : DRP,VRP,Logistics Systems

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