PERIODIC INVENTORY ROUTING PROBLEM
MODEL DEVELOPMENT FOR SCHEDULING TANK TRUCK WITH HETEROGENEOUS CAPACITATED
(Case study: ISG PT. PERTAMINA UPms V SURABAYA)

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Abstract

Trade-off between supplier and retailers is a phenomenon that can hardly be avoided. This indications are also found in the PT. PERTAMINA as supplier and the filling station as retailer. Both have interests that differ from each other. Supplier want that replenishment done with low frequency but with a large quantity to save on transportation costs. While retailers are concerned to minimize inventory storage costs with replenishment want done as often as possible. Therefore we develope a model of Periodic Inventory Routing that can accommodate the trade-off simultaneously. The model developed by modifying the objective function and parameters for characterizing heterogenous capacitated of vehicle and adding several constraints from previous models. The model is under Vendor Managed Inventory system (VMI) where the supplier is fully responsible for managing inventory from retailers. The method used to solve models that have been developed is an integer programming using LINGO software. From the results of running LINGO, it can be concluded that the models have been developed has quite good performance compared existing conditions with a reduction in the percentage of stations that require replenishment every day for 79% of the total gas stations in Surabaya, becoming 68%, truck rental cost savings of Rp 1,596,039 per day and ensure retailers do not have any stockout.

Keywords: trade-off, inventory routing, heterogeneous capacitated, VMI, integer programming, LINGO, and stockout.