Proceedings of the 6th Annual World Conference
of the Society for Industrial and Systems Engineering,
Herndon, VA, USA
October 19-20, 2017

Study of Case: A Model for Optimization in Less Than Truckload Distribution Networks

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Abstract: the goods logistics is key for the competitiveness of companies, because of these depends that the orders of the clients arrive in time and form to the established destinations. Due to this, more and more strategies are now being presented to reduce costs and improve the effectiveness of supply chains in the transportation systems. One of these strategies is the LTL (Less Than Truckload) been the most used way to send goods by road, characterized by consolidating loads from different suppliers and deliver to one or more in order to maximize the capacity of the transport vehicle. However, there are numerous problems that cover this mode of transport, because the consolidation of loads is one of the most complex problems for any company.

This paper will present a model for LTL freight, this is partitioned into three models, and the first one represents direct shipments of goods, from the provider to the buyer using a third party logistics provider (TPL), the second one is by using a consolidation center of a TPL, and the last one using milk runs, the model is created based on TPL costs such as fuel surcharge, milk runs stops, distance and load. The propose model is optimized using a non-generational genetic algorithm, where the cost for the consolidation of goods will be reduce. This model is tested on shipments coming from the Midwest area to Mexico in order to reduce transportations costs.