

# ABSTRACT

This research focuses on developing a systematic route optimizing model that can be used to optimize the transport operation of a distribution company. The chilled good distribution network of Fonterra Brands Lanka (FBL) has been the base for creating this system. All the data used for developing and testing this model are taken from the data base of FBL transport department.

The transport problem which this research has taken into consideration is the Capacitate Vehicle Routing Problem which is a branch of the Vehicle Routing Problem tree. The FBL distribution network is an excellent example of this type of distribution problem.

In order to develop this route planning system, a combination of algorithms and mathematical techniques has been used. Furthermore, the developed system has been tested with secondary data.

According to the test conducted for the selected data sample, it was proved that applying this systematic route optimizing model for a distribution network can have a significant influence on increasing the cost efficiency of the distribution operation. Furthermore, the reduction of truck movements by route optimization can directly reduce the carbon footprint of distribution operations and help to minimize the prevailing traffic congestions in the road transport network. Less use of fossil fuels by reduced truck movements can also lead to supporting the country's economy and society.

**Keywords:** Transport Optimization; Route Optimization; Distribution; Vehicle Routing Problem; Capacitated Vehicle Routing Problem; Algorithm; Clustering

