

ABSTRACT

PT Mitra Rajawali Banjaran (PT MRB) is a company engaged in the pharmaceutical and medical device industry that routinely delivers its products to distributors spread across five provinces namely West Java, Jakarta, Banten, Central Java and East Java. The high costs incurred by the company during the distribution process of medical devices to distributors affect the profits obtained less. In this study, the best distribution route was determined using the Saving Matrix method by sorting the destinations in the route using the nearest neighbor method. The result will be the optimal route. Decision making will also pay attention to the capacity of the transport used and the possibility of grouping shipments as an analysis method based on predetermined capacity limits. Data processing steps are carried out by identifying the distance matrix, savings matrix, allocation of destinations to vehicles and routes, sorting destinations, and determining the optimal route.

Initial data shows that there are five delivery routes based on three destination regions namely west, centre and east. The saving matrix calculation refers to the distributor who has the largest saving value for the West Java route between Tangerang and Serang with a value of 380.6 KM, the largest saving distance for the Central Java route is between Solo and Yogyakarta with a value of 883.8 KM and for the East Java route the largest savings are between Malang and Jember with a value of 1463 KM.

After sorting with the nearest neighbour method and determining the allocation of routes and vehicles, four optimal routes were produced with details of two routes for the western region and one route each for the central and eastern regions. The results showed that the application of the saving matrix proved successful in showing a savings of 16.42% with a previous distance of 4728.3 KM to 3951.7 KM. Through the selection of the optimal route, the cost incurred is Rp. 31,710,200 lower than the previous cost and in accordance with the target which states that the maximum transportation cost in one month is Rp. 32,000,000.

Keyword: *Distribution, Nearest Neighbors, Saving Matrix, Routing, Supply Chain*