Development of a Transport Model to Minimize Shipping Costs of Electrical Products

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Abstract: This study presents a case of minimization of transportation costs for the distribution of electrical products in a Mexican company. The main objective is to minimize the cost of transporting goods from six manufacturing plants to four distribution centers. The carrier offering shipping service has not enough capacity for product shipments, affecting deliveries in a timely manner to customers. Therefore, the transport and logistics network used are inadequate. To solve the problem, the transport model methodology was used to set the optimal quantity of pallets loaded with electrical products that need to be sent from production plants to distribution centers, minimizing the total cost of shipping. The cost per pallet was determined according to the weight and volume of stacked products on each pallet as well as the rates of the distances taken. One of the restrictions to be considered is the maximum capacity of pallets per truck, as well as supply per production plant and demand per distribution center. A program of shipments was established, reducing by more than 40% of the total monthly cost of transportation compared to what was being driven. By implementing the proposed model, it is expected an increase in customer satisfaction through a network of effective delivery.

Keywords: Transport Model, Minimizing Transportation Costs, Operations Research