



Abstract

Holcim Lanka Ltd., being the market leader in the cement manufacturing industry is initiating to implement a palletized cement bag handling process in order to improve the efficiency of the supply chain. A smooth flow of material throughout the supply chain ensures the reduction of cost, time by improving the performance level of all logistics activities within the supply chain.

Palletization or unit load concept is introduced to overcome the excess demands on the plants which further caused to increase the Load Cycle Time of the vehicles and Spill overs or sales losses occurred to the organization. Currently, the two plants :Puttalam Cement Works and Ruhunu Cement Works operates at their fullest capacities while catering over 7000 outlets all over the country.

The study is based on the pallet delivering process to the customers and the outcome is given as to which dispatch point, the plant or the warehouse that the customers are allocated to serve. The study further focuses on optimizing the pallet delivery operation in both cost to serve for each customer and while considering the plant utilizations. A total retail volume of 780,000 Metric Tons of bagged cement distributing to 31 distributors who fulfill the condition of sales volume performances over 1,000 Metric Tons per month are considered in the study. Optimization of the total cost to serve is determined with the theoretical aspects used in Transportation Problem Solving methods under the three approaches of Northwest Corner method, Least Cost method and Vogel's Approximation method. The total cost to serve is further analyzed based on two independent scenarios considering the characteristics of material supply to the Colombo warehouse, over a *scenario analysis*. Moreover, the requirement of a material handling equipment at the *points of distributors' and retailers' is being analyzed with the breakeven volumes for the annual investments made for such material handling equipment.*

The conclusion determines the allocation of distribution point to each of the customer in the population with the minimum total cost to serve for each of the customers. Accordingly, this further describes the customers who are eligible of acquiring the material handling equipment for the special process of palletized cement bag handling within the expressed payback periods.

Key words – *Supply Chain, Logistics, Load Cycle Time, Spill Over, Palletized Cement, Optimization, Total Cost to Serve, Transportation Problem Solving, Material Handling Equipment, Break Even Analysis.*