ABSTRACT

PT XYZ is a company that produce cocoa product, that can be divided into four types of cocoa, the first is cocoa mass, this is the first form of cocoa after the bean entered the roasting machine. The next cocoa product is cocoa butter and cocoa cake, these are product types that produced if cocoa mass is processed to the next process. The last type is cocoa powder, which is become the last form of cocoa cake. Each type of cocoa product has its own SKUs, that makes PT XYZ has a lot of SKU, around 123 SKUs.

The problem that faced by PT XYZ is that this company undergo overstock condition, where stock on-hand each month in 10 months periods exceed the upper limit that allowed by the company that already planned by the planner in the beginning of period. PT XYZ its self has a policy that on-hand at the end of the month should be not more than 70% from the demand in that month, because the production number is actually already planned in the beginning of the month, because of PT XYZ will process the product if there is any demand from customer, so the production planned based on the demand. This excess in on-hand affect the holding cost with average 38% of excess in holding cost. But, this decision chosen by PT XYZ to ensure that they fulfill all the demand but this causing high in holding cost and PT XYZ want to fix this problem.

From the demand pattern using data from 10 months production, it is known that most of the demand undergo stochastic. In order to optimize the service level with sufficient amount of on-hand that kept, the Economic Lot Scheduling Problem (ELSP) combined with (Q,r) inventory policy. In this method, the optimal cycle time will be calculated to determine how much is the optimal lot size and reorder point to minimize the total cost while still achieve high service level.

The optimization of this research shows that the service level optimized become 99.3% with holding cost decrease as much as 49%, change-over cost decrease as much as 29%, backorder cost increase as much as Rp21,009.24 and total cost is decrease as much as 40.3% or can be converted to Rp380,000.68 from Rp636,619.83.

Keywords: chocolate industry, overstock, inventory policy, stochastic demand, Economic Lot Scheduling Problem, service level, minimize total cost.