ABSTRACT

Managing replenishment of multi item from one supplier had not been widely discussed in random demands context. This research would try to apply a model to manage multi item common vendor inventory system with random demands to one supplier. This research’s done in a hospital “X” which in reality has to order multi items to a supplier “KI”.

The initial model that was used before application of heuristic model is classic optimization model by Goyal (1974) – in which the calculation results will be used as inputs of heuristic models – by Kumar and Chandra (2001). The assumption of Goyal optimization model is constant demand level for each item. Whilst that of heuristic is demand level for each item has normal distribution. The primary output of this heuristic model would then be $\alpha$ and $\beta$ parameters – which can resulted in inventory system with minimum cost. Spread sheet calculation simulation are used to apply this model.

The spread sheet simulation results show that the most optimum values for $\alpha$ and $\beta$ parameters are 0.06 and 4 – which resulting the total inventory simulation value of Rp. 2,877,210 during 2002. This value would then be compared with the total hospital “X” inventory value in the same time span. The total inventory value can be calculated by collecting stock out data unit for each item, hospital’s average order frequency to supplier “KI” every month, and final stock of each item every month’s end. From previous data, the total hospital value was Rp.5,185,991 for the same period. Hence, we can see that by using the heuristic model calculated, the hospital inventory cost will be reduced by 44% compare with that of the current model.

Key words: heuristic, coordinate replenishment, Goyal’s model, inventory control