

## ABSTRACT

*PT XYZ is one of the main dealers of motorcycle and spare parts company. The company is responsible to distributing all motorcycle and spare parts to all dealer in Bandung area. Based on the research conducted, the problems in PT. XYZ are occurrence 50% Over stock and 25% Out of Stock condition. One of the main factor is the procurement activity that has not been planned yet and the customer demand is uncertain (probabilistic) and then comes this extreme condition. Problems that occurred in PT XYZ can be solved by using a probabilistic approach. Before execute the plan, the first thing is classify each class of spare parts based on ABC Analysis. The types of spare parts in A category should be a top priority in inventory control. Probabilistic inventory model used are Q and P Model because both models are able to determine the optimum number for each spare part ordering, time to reorder and find out the amount of safety stock for each spare so that the inventory costs is match with any factors needed.*

*In this research, the formulation used is the Hadley-Within solution in Q and P Model. The actual condition of one of spare parts is take an inventory cost as much as Rp.157.828.585,42 whereas the calculation of Q Model is Rp.79.199.277,13 and the calculation of P Model is Rp 141.810.670,46. From both of inventory models, the saving obtained with the Q Model is 49% of the actual cost and the saving obtained with the P Model is 10%.*

*This research was also conducted application system planning of spare part inventory in PT XYZ which is this application can be used to help the user in decision making process about inventory policies. This application has positive impact for company performance.*

*Keywords: over stock, out of stock, ABC-Analysis, Model Q, Model P, Hadley-Within.*