An Economic Order Quantity Model For Defective Items Under Permissible Delay In Payments And Shortage

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Inventory control models are classified as deterministic and stochastic models upon the condition that the demand is definitely known, or not. Economic Order Quantity Models are among the most widely used techniques in deterministic inventory control models. Economic Order Quantity models have many assumptions that are not satisfied completely with recent economic conditions such as all items in an ordered lot are perfect quality and the payments are made as soon as the items received. In this study, by loosening these two assumptions, a new model is proposed in the case of defective items, permissible delay in payments and shortage. For two case of permissible delay, the optimal values are determined and the effects of permissible delay in payments on ordering quantity and total profit are analyzed. Result of the analysis show that while permissible delay of payment increases order quantity decreases and total profit increases. Furthermore, numerical examples are given for the developed model and changes in the optimal values are analyzed with sensitivity analysis. Finally some previously published results are deduced as special cases of proposed model.

Keywords: Economic Order Quantity, Permissible delay in Payments, Defective items, Shortage.