REVISITING THE CLASSICAL EOQ MODEL: AN EXTENSION FOR A SHORTER PLANNING HORIZON WITH INTEGER REQUIREMENTS FOR ORDER-CYCLE TIMES AND THE NUMBER OF ORDER-CYCLES

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ABSTRACT

In the classical Economic Order Quantity (EOQ) model, we assume that the planning horizon is infinite, and the parameters such as ordering and holding costs and demand rate are stationary or constant over the entire planning horizon. On the other hand, the Dynamic Lot Sizing (DLS) models described in the literature deal with a shorter horizon and parameter values changing from one period to the next. However, in practice, one would expect the parameter values to vary significantly if the planning horizon is relatively long, and to be relatively stable or constant, if it were shorter. With the adoption of supply chain management strategies and e-business technologies by many organizations in recent years, focus has shifted to shorter planning horizons. But only a few studies involving shorter horizons and stationary parameters have appeared in the literature. Even among them, each one deals with a special case involving combinations such as a finite production rate and no backlog or instantaneous replenishment with backlog, etc. Further, the algorithms described in these studies are not as simple or computationally as efficient as the classical EOQ formula. In this paper, a comprehensive version of these finite horizon inventory models is considered and an optimization algorithm that compares favorably with the classical EOQ formula in terms of simplicity and computational efficiency is presented for solving the several variants of the problem.

Keywords: *EOQ model, Economic Order Quantity, Optimal Lot Sizing, Supply Chain Management*