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Comparison of order-fulfilment performance in MTO and MTS systems with an inventory cost budget constraint

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Abstract

The make-to-order or make-to-stock decision is an important issue faced by firms in many industries. In the existing literature, optimisation models comparing the cost of making product to stock versus making it to order have been widely developed. Motivated by the problem faced by a machinery company, we examine the issue from a different perspective and formulate service-maximisation models with inventory cost budget constraints. We compare and analyse order-fulfilment performance measures for the two different production control systems. The goal is to identify the key influencing factors and devise a production strategy that maximises service performance subject to resource constraint. We show that the MTO production control system is preferred in the production system with low component values and long component processing times and high value and short lead time in the final assembly

stage; while the MTS production control system is applicable to the production system with high component values and short component processing times and little value and long lead time in the final assembly stage.

Keywords:

order fill-rate; average order processing time; inventory cost budget; make-to-order; make-to-stock

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