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Stock optimization for service differentiated demands with fill rate and waiting time requirements

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TITLE PAGE

1. Title

Stock Optimization for Service Differentiated Demands with Fill Rate and Waiting Time Requirements

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ABSTRACT

We develop a computationally efficient optimization procedure to optimize stock and rationing levels for a model consisting of a single product with two priority-demand classes, given by mutually independent, stationary, Poisson demand processes. Each priority class has its own service levels requirements, defined by the class-specific fill rate and expected waiting-time levels. Order lead times are independent and identically distributed random variables. This is the first study in this setting to consider both waiting-time constraints along with fill rate requirements.

Keywords: Threshold rationing policies; Continuous review lot-for-lot policy; Priority-demand classes; Service levels; Backorder systems; Inventory allocation

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