Feiring, Bruce R.
Production planning in stochastic demand environments. (English) Zbl 0752.90035

Summary: The effects of fluctuating demand on production and inventory levels are important in manufacturing resource planning. Thus, the focus of this paper is on aggregate production planning of manufacturing resources in order to satisfy stochastic demand for a family of products, to minimize total costs that include production and inventory holding costs over a rolling horizon.

If it is assumed that, in a commercial setting, the demands are fixed, then the production plans generated by a mathematical programming procedure are not responsive to the actual fluctuations of stochastic demand in each time period.

The situation discussed here considers the case where demands are normally distributed with means and variances that are sequentially revised as new observations of demand are received over time. This assumption allows the probabilistic constraint to be converted to an equivalent linearly-constrained deterministic model. Extensions to the normality assumption are discussed. Other ideas, such as optimal control theory, learning and adaptive signal processing extensions, are discussed as well.

MSC:
90B30 Production models
90C90 Applications of mathematical programming

Keywords:
manufacturing resource planning; stochastic demand

Full Text: DOI

References:

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.