A Stochastic Programming for Aggregate Production Planning Model with Demand Uncertainty

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ABSTRACT

The better production plans have the international enterprises or manufacturers, the more competiveness on the market. There are three kinds of production plans, called short term, median term, and long term plans. Aggregate production planning is belonging to median term plans. Its horizon covers from two months to 12 months. It plays an important role in the decision-making system of an enterprise or manufacturer because it influences the variations of production, inventory and human labors during production horizon. According aggregate production planning, real demands and inventory, the master production, capacity plan and material requirements planning can be scheduled. In practice, aggregate production planning includes uncertainties, such as cost, price, capacity, labor and demands. In this study, the demand is considered as a random variable in an aggregate production planning. A stochastic programming model is applied to maximize profit with limited capacity. For the proposed aggregate production planning problem, expected-value, wait-and-see model and here-and-now model are compared and sensitivity analysis is performed. The results show that here-and-now solution is superior to expected-value model and approaching wait-and-see model. The forward means the proposed stochastic model is more real and profitable for practice; the latter means its optimality approaches the solution with perfect information.

Keywords : Aggregate Production Planning、Stochastic Programming、Uncertainty

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REFERENCES

一、 中文文獻
[1] 李綺容 (2004)。航空貨運網路於需求不確定下之規劃。國立嘉義大學運輸與物流工程研究所碩士論文。
[2] 余強生 (2006)。可協調儲運供應與銷售努力的單一產品多時期之穩健供應鏈模式。台灣管理學刊, 6(1), 1-34。
[9] 博和彥 (2005)。生產與作業管理。前程文化。
[12] 蘇恩德 (2011)。考慮價格跳躍不對稱與波動狀態轉換之動態資產配置考慮價格跳躍不對稱與波動狀態轉換之動態資產配置。管理與系統, 18(1), 1-33。

二、 英文文獻


