Optimization Modeling for Production, Inventory and Distribution of Perishable Items: A Review

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Abstract

Perishable items are those that have limited useful life and so they need proper storage and transportation facilities to avoid spoilage and maintain freshness. Perishable items can be classified in two broad categories based on the nature of deterioration: (1) items with a fixed shelf life such as blood or ready-mix concrete; and (2) items with continuous decay such as food, vegetable, flower, milk, meat and so on. Controlling the quality of perishable items at delivery is an important consideration in supply chain management. Initial research in the area was devoted to inventory ordering and stocking policies. Current research includes other complexities such as cold storage and transport options. It was also seen that when compared to the amount of research work done in inventory models for perishable goods, very little research is available in the area of vehicle routing considering the perishability of the items. This survey paper presents an overview of research and current status of the problem. The research papers are examined and categorized on various criteria such as choice of optimization model, model objectives, assumptions and characteristics of the model and solution approach.

Keywords
Distribution, Inventory, Literature Review, Perishable Item, Vehicle Routing Problem