

# Analysis of Production Decision with Lead Time Sensitive

## Demand

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### ABSTRACT

For many consumers, the direct selling channel is more convenient than the traditional channel. Customers like to shop on websites, phone and TV for lower prices and variety of products. In the meantime, costumers concern more and more on service quality which affects the direct selling channel more greatly. The delivery lead time is one of the major factors in service quality for the direct selling channel. The aim of this research is to probe into the manufacturers' production decisions with the goal of delivering products to customers in shorter time with uncertainty in demand. The manufacturer may need to rely on demand forecast when making production decisions and have to take into account the sales price and production capacity given the objective of maximizing total profit. A mathematical model for a production/sales system with demand affected by delivery lead time is constructed. The behavior pattern of the system is studied by utilizing the developed model, numerical experiment and sensitivity analysis. Our results reveal that when over-production at initial stages can shorten delivery lead time, thus boosts customer demand, and increases total profit. Our finding may serve as a production decisions reference to manufacturing companies.