

Strategic logistics planning and inventory management strategies

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Lecture 11. Inventory Models for Independent Demand

Introduction: Inventory models for independent demand are mathematical models used to help companies make decisions about how much inventory to hold and when to order new inventory. These models are designed specifically for situations where demand is independent of other variables, such as production or delivery schedules.

Section 1: Basic Inventory Models for Independent Demand

The basic inventory models for independent demand include the economic order quantity (EOQ) model and the continuous review (Q, r) model.

The EOQ model is a classic inventory model that balances the cost of holding inventory with the cost of ordering new inventory.

The continuous review (Q, r) model is a model that continuously reviews inventory levels and orders new inventory as needed.

Both of these models are designed to minimize the total cost of inventory, including holding costs and ordering costs.

Section 2: Advanced Inventory Models for Independent Demand

In addition to the basic inventory models, there are a number of advanced inventory models for independent demand. The (s, S) model sets a reorder point at which new inventory is ordered, and the (r, Q) model sets a target inventory level.

These advanced models are more complex than the basic models but offer more control over inventory levels and can better handle situations with changing demand patterns.

Section 3: Choosing the Right Inventory Model for Independent Demand

Companies must consider a number of factors when choosing an inventory model for independent demand, including the nature of their business, the variability of demand, and the cost of holding inventory.

For example, a company with low demand variability may choose a simple EOQ model, while a company with high demand variability may choose a more complex (s, S) or (r, Q) model.

Companies must also consider the impact of technology, such as inventory management software, on their ability to track and manage inventory levels.

Questions:

1. What are inventory models for independent demand and why are they important for inventory management?
2. What are the basic and advanced inventory models for independent demand and what are the differences between them?
3. How do companies choose the right inventory model for independent demand and what factors must they consider?
4. How can inventory models for independent demand improve supply chain efficiency and minimize total inventory costs?