

variability of lead times. A switch from periodic monitoring to continuous monitoring can also help reduce inventories. Another key managerial lever to reduce the required safety inventories is to exploit aggregation. This may be achieved by physically aggregating inventories, virtually aggregating inventories using information centralization, specializing inventories based on demand volume, exploiting substitution, using component commonality, and postponing product differentiation.

Discussion Questions

1. What is the role of safety inventory in the supply chain?
2. Explain how a reduction in lead time can help a supply chain reduce safety inventory without hurting product availability.
3. What are the pros and cons of the various measures of product availability?
4. Describe the two types of ordering policies and the impact that each of them has on safety inventory.
5. What is the impact of supply uncertainty on safety inventory?
6. Why can a Home Depot with a few large stores provide a higher level of product availability with lower inventories than a hardware store chain such as Tru-Value, with many small stores?
7. Why is Amazon.com able to provide a large variety of books and music with less safety inventory than a bookstore chain selling through retail stores?
8. In the 1980s, paint was sold by color and size in paint stores. Today, paint is mixed at the paint store according to the color required. Discuss what, if any, impact this change has on safety inventories in the supply chain.
9. A new technology allows books to be printed in ten minutes. Borders has decided to purchase these machines for each store. They must decide which books to carry in stock and which books to print on demand using this technology. Do you recommend it for best-sellers or for other books? Why?

Exercises

1. Weekly demand for Motorola cell phones at a Best Buy store is normally distributed, with a mean of 300 and a standard deviation of 200. Motorola takes two weeks to supply a Best Buy order. Best Buy is targeting a CSL of 95 percent and monitors its inventory continuously. How much safety inventory of cell phones should Best Buy carry? What should its ROP be?
2. Reconsider the Best Buy store in Exercise 1. The store manager has decided to follow a periodic review policy to manage inventory of cell phones. She plans to order every three weeks. Given a desired CSL of 95 percent, how much safety inventory should the store carry? What should its OUL be?
3. Assume that the Best Buy store in Exercise 1 has a policy of ordering cell phones from Motorola in lots of 500. Weekly demand for Motorola cell phones at the store is normally distributed, with a mean of 300 and a standard deviation of 200. Motorola takes two weeks to supply an order. If the store manager is targeting a fill rate of 99 percent, what safety inventory should the store carry? What should its ROP be?
4. Weekly demand for HP printers at a Sam's Club store is normally distributed, with a mean of 250 and a standard deviation of 150. The store manager continuously monitors inventory and currently orders 1,000 printers each time the inventory drops to 600 printers. HP currently takes two weeks to fill an order. How much safety inventory does the store carry? What CSL does Sam's Club achieve as a result of this policy? What fill rate does the store achieve?
5. Return to the Sam's Club store in Exercise 4. Assume that the supply lead time from HP is normally distributed, with a mean of 2 weeks and a standard deviation of 1.5 weeks. How much safety inventory should Sam's Club carry if it wants to provide a CSL of 95 percent?