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ACCA F9

Financial Management

财务管理

ACCA Lecturer: Sinny Shao

Part C working capital management II

1. what is working capital
2. working capital management
3. working capital finance

Managing working capital

Current assets	Current liabilities
Cash	Trade accounts payable
Inventory of raw materials	Taxation payable
Inventory of work in progress	Dividend payments due
Inventory of finished goods	Short-term loans
Amounts receivable from customers	Long-term loans maturing within one year
Marketable securities	Lease rentals due within one year

managing inventories

managing accounts receivable

managing accounts payable

Managing inventories

1. Components of inventories

raw material 原材料

work in process （WIP） 半成品

final goods 成品

2. Why managing inventories？

costs、 bulk discount、buffer inventory

costs including： storage costs，holding costs，booking and delivery costs， etc

Managing inventories——EOQ model

EOQ model：The economic order quantity (EOQ) is the optimal ordering quantity for an item of inventory which will minimise costs.

Let D = usage in units for one period (the demand)

C0= cost of placing one order

Ch= holding cost per unit of inventory for one period

Q= re-order quantity

Holding costs：（Q*Ch）/2

ordering costs：(D*C0)/Q

目标：使holding costs 与ordering costs 和最小

$$EOQ = \sqrt{\frac{2C_0D}{C_h}}$$

Managing inventories

Example for EOQ：

The demand for a commodity is 40,000 units a year, at a steady rate. It costs $20 to place an order, and 40c to hold a unit for a year. Find the order size to minimise inventory costs, the number of orders placed each year, the length of the inventory cycle and the total costs of holding inventory for the year.

Solution

$$Q = \sqrt{\frac{2C_0D}{C_h}} = \sqrt{\frac{2\times 20\times 40{,}000}{0.4}} = 2{,}000 \text{ units.}$$

This means that there will be:

$$\frac{40{,}000}{2{,}000} = 20 \text{ orders placed each year.}$$

The inventory cycle is therefore:

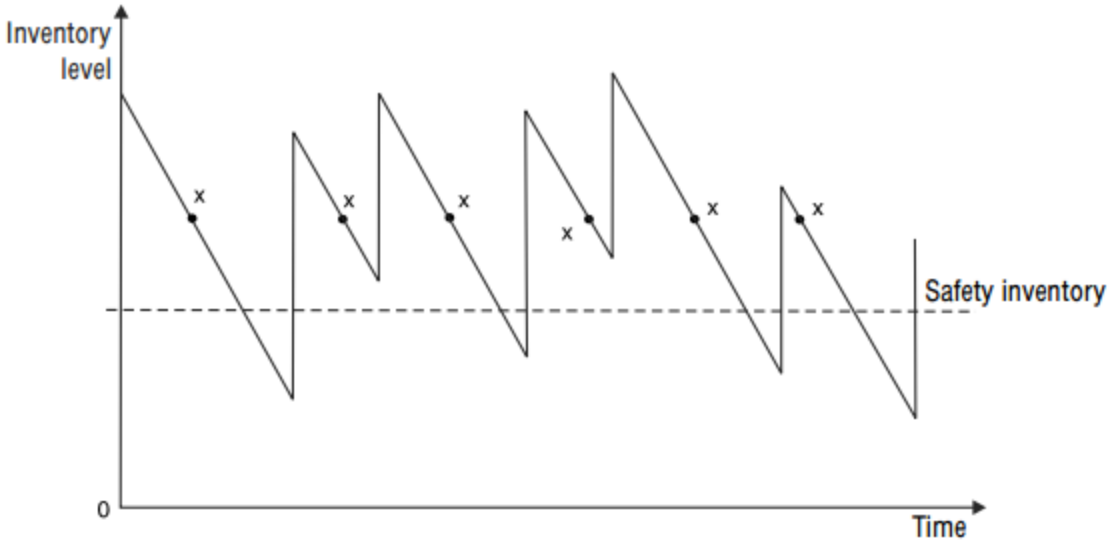
$$\frac{52 \text{ weeks}}{20 \text{ orders}} = 2.6 \text{ weeks.}$$

Total costs will be $(20 \times \$20) + \left(\frac{2{,}000}{2} \times 40c\right) = \$800$ a year.

Managing inventories——re-order level system

Re-order level= maximum usage*maximum lead time.

the measure of inventory at which a replenishment order should be made



Managing inventories—— Maximum and buffer safety inventory levels

Maximum inventory level= re-order level + re-order quantity – (minimum usage*minimum lead time)

Buffer safety inventory= re-order level – (average usage*average lead time)

Average inventory= buffer safety inventory + re - order amount/2

A company has an inventory management policy which involves ordering 50,000 units when the inventory level falls to 15,000 units. Forecast demand to meetproduction requirements during the next year is 310,000 units. You should assume a 50-week year and that demand is constant throughout the year. Orders are received two weeks after being placed with the supplier. What is the average inventory level?

Solution

Average usage per week = 310,000 units/50 weeks = 6,200 units

Average lead time = 2 weeks

Re-order level = 15,000 units

Buffer safety inventory = re-order level – (average usage × average lead time)

= 15,000 – (6,200 × 2) = 2,600 units

$$\text{Average inventory} = \text{buffer safety inventory} + \frac{\text{re-order amount}}{2}$$

$$= 2{,}600 + \frac{50{,}000}{2} = 27{,}600 \text{ units}$$

Managing inventories—— effect of discounts

the EOQ formula should be modified：

the aim is to minimize the total costs of
Total purchasing costs + Ordering costs + Inventory holding costs

Example：

The annual demand for an item of inventory is 125 units. The item costs $200 a unit to purchase, the holding cost for one unit for one year is 15% of the unit cost and ordering costs are $300 an order. The supplier offers a 3% discount for orders of 60 units or more, and a discount of 5% for orders of 90 units or more. What is the cost-minimising order size?

Solution

(a) The EOQ ignoring discounts is:

$$\sqrt{\frac{2 \times 300 \times 125}{15\% \text{ of } 200}} = 50 \text{ units}$$

	$
Purchases (no discount) 125 × $200	25,000
Holding costs ($^{50}/_{2}$) 25 units × 15% × $200	750
Ordering costs 2.5 orders × $300	750
Total annual costs	26,500

(b) With a discount of 3% and an order quantity of 60 units costs are as follows.

	$
Purchases $25,000 × 97%	24,250
Holding costs 30 units × 15% of 97% of $200	873
Ordering costs 2.08 orders × $300	625
Total annual costs	25,748

(c) With a discount of 5% and an order quantity of 90 units costs are as follows.

	$
Purchases $25,000 × 95%	23,750.0
Holding costs 45 units × 15% of 95% of $200	1,282.5
Ordering costs 1.39 orders × $300	416.7
Total annual costs	25,449.2

The cheapest option is to order 90 units at a time.

Managing inventories——JIT

Just in time（JIT）：

Just-in-time procurement is a term which describes a policy of obtaining goods from suppliers at the latest possible time

reduce inventories，and sometimes may zero inventory。

benefits：

- Reduction in inventory holding costs
- Reduced manufacturing lead times
- Improved labour productivity
- Reduced scrap/rework/warranty costs

Thank You!