Session 02

Cost Analysis for Inventory Valuations

Programme : Executive Diploma in Business & Accounting (EDBA 2014)
Course : Cost Analysis in Business
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Learning Outcomes

- Have an understanding on why inventory management is important
- Understand different methods of inventory controlling and counting systems
- How to determine the optimum level of inventory
- Apply first-in-first-out (FIFO), last-in-first-out (LIFO) and average cost (AVCO) methods of accounting for stock, calculating stock values and related gross profit
- Documents used in material control

Importance of Inventory Management

- *Don't miss sales due to out-of-stock items*
- *Don't waste cash in overstocked inventory*
- *Improve the accuracy of your accounting and profit reporting*
- *Identify issues before they get out of control*
- *Customer service*
- *Efficient re-ordering*
- *Minimise theft and losses*
- *Minimise warehouse costs*

Controlling Inventory

- ***The two bin system***

When items in the first bin have finished, an order is placed to refill or replace these items. The second bin is supposed to have enough items to last until the placed order arrives. The first bin has a minimum of stock and the second bin keeps reserve stock or remaining material.

http://www.youtube.com/watch?v=Tvgo9DuXKsg

Controlling Inventory

- ***ABC analysis***

A items – High value and small in number

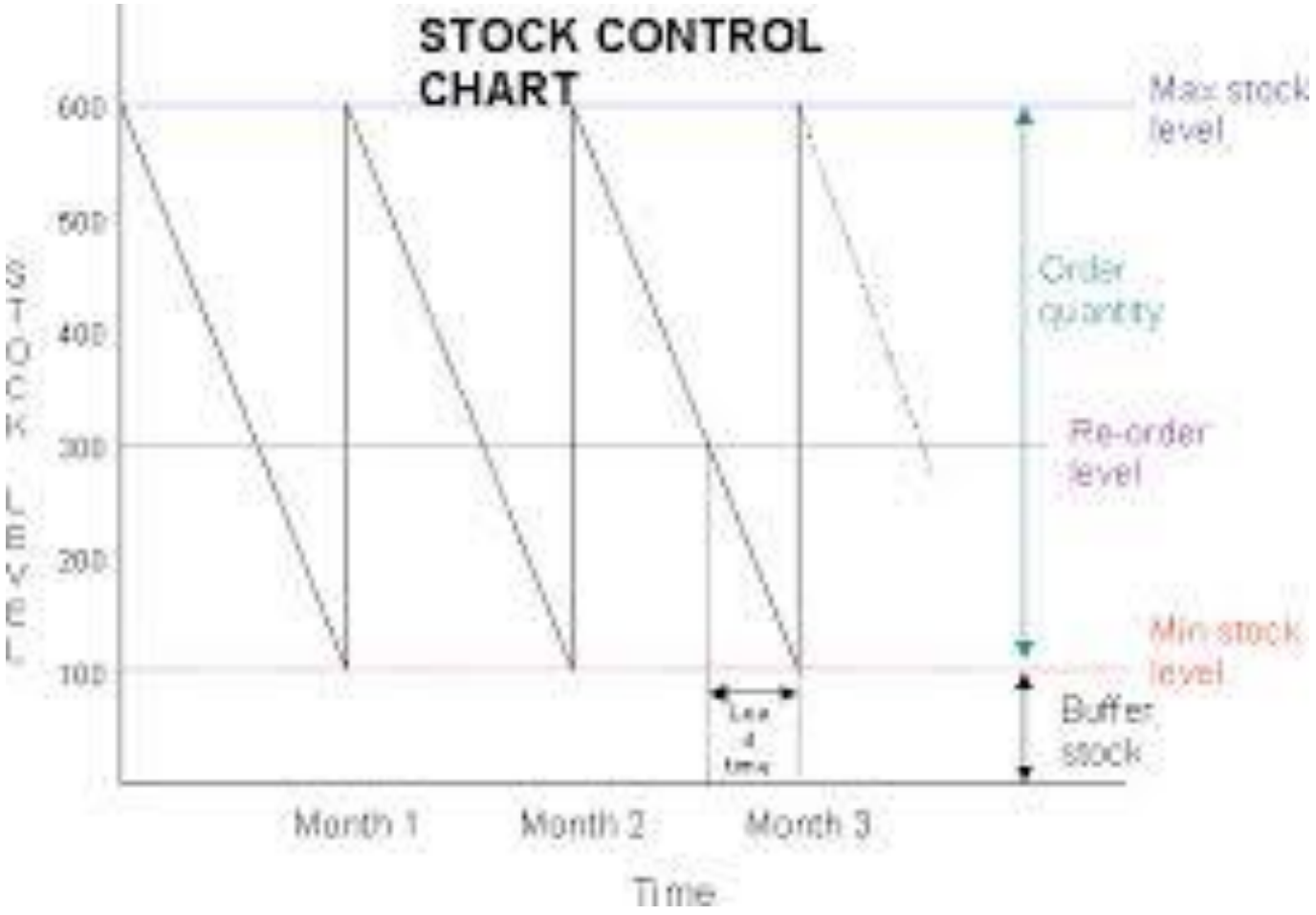
B items – Moderate value and moderate in number

C items – Low value and large in number

The ABC analysis provides a mechanism for identifying items that will have a significant impact on overall inventory cost, while also providing a mechanism for identifying different categories of stock that will require different management and controls.

Controlling Inventory

- ***The use of control limits***



Controlling Inventory

- ***The use of control limits***

Maximum Level = Re-order Level + Re-order quantity - (Minimum usage x Minimum Delivery Time)

Re Order Level = (Maximum Usage x Minimum Delivery Time)

Minimum stock level = Re order level - (Average Usage × Average Delivery Time)

Controlling Inventory

- ***The use of control limits***

Average usage 100 units per day

Minimum usage 60 units per day

Maximum usage 130 units per day

Lead time 20-26 days

Re order Qty 4,000 units

Calculate the control limits??

Inventory Counting Systems

- ***Periodic System***

A method of inventory valuation for financial reporting purposes where a physical count of the inventory is performed at specific intervals. This accounting method for inventory valuation only keeps track of the inventory at the beginning of a period, the purchases made and the sales during the same period and is recorded under the asset section of the balance sheet.

Inventory Counting Systems

- ***Perpetual Inventory System***

A perpetual inventory system is superior to the older periodic inventory systems because it allows for real-time tracking of sales as well as inventory levels for individual items, helping to prevent stock outs. A perpetual inventory also does not need to be adjusted manually by the company's accountants except to the extent it disagrees with the physical inventory count due to loss, breakage or theft.

What is the Optimal Order Quantity

Total Inventory Cost = Ordering Cost + Inventory Holding Cost

Larger order quantities lead to higher holding cost but lower ordering cost

Smaller order quantities lead to lower holding cost but higher ordering cost

Optimal order quantity maintains a trade off between two types of inventory cost and thereby minimum cost

Economic Order Quantity (EOQ)

Ordering Costs

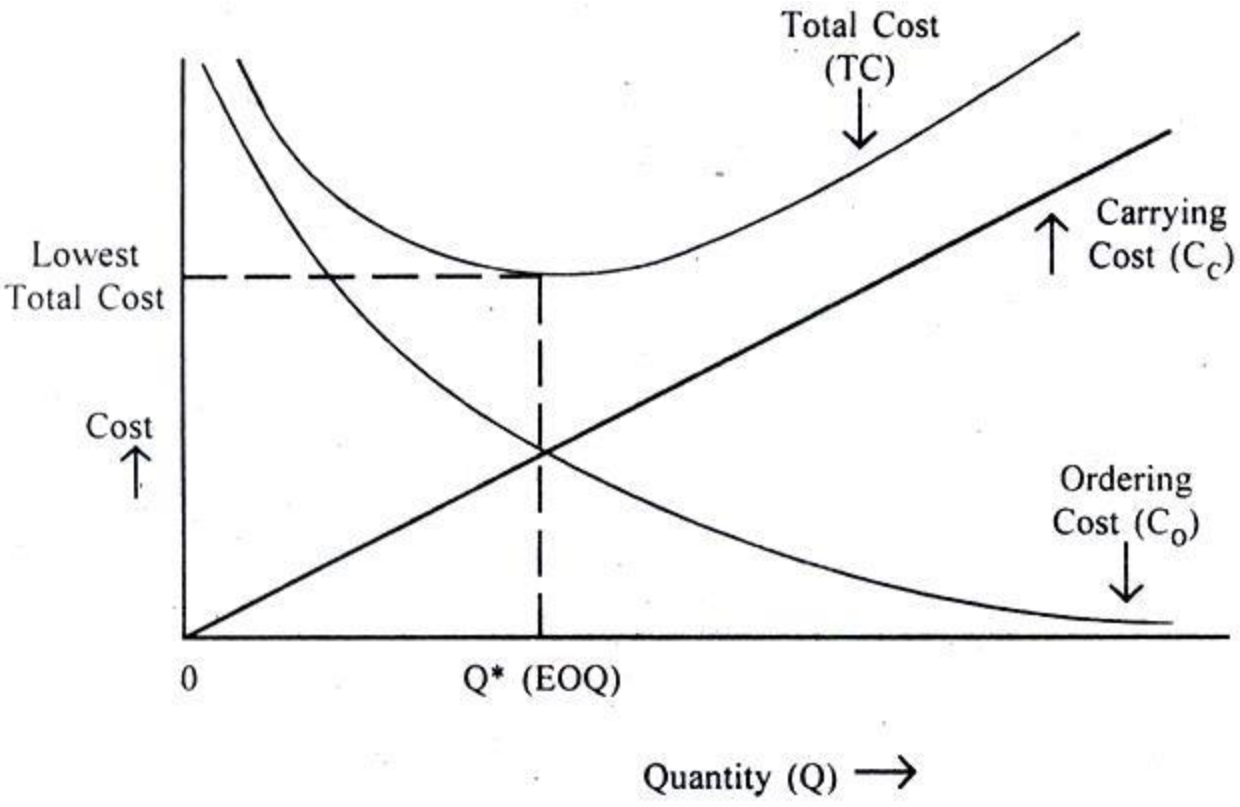
- Transportation charges
- Inspection charges
- Clerical and administration costs

Holding Costs

- Storage costs
- Supervision costs
- Insurance costs
- Damages to stock
- Stock pilferage

Economic Order Quantity (EOQ)

Economic order quantity is the order quantity that minimizes total inventory holding costs and ordering costs



Economic Order Quantity (EOQ)

$$EOQ = \sqrt{\frac{2 \times D \times Co}{Ch}}$$

D – Annual demand

Co – Cost of ordering ⟶ *No. of orders * Cost per order*

Ch – Cost of holding ⟶ *Ave. inventory * Holding cost per unit*

A company has a monthly demand of 200 units and cost of placing an order is LKR5,000 and each unit costs LKR1,000 for which holding cost is 10% of unit price

Calculate the EOQ

Quantity Discount Model

Comptek Computers wants to reduce a large stock of PCs it is discontinuing. It has offered the University Bookstore at Tech a quantity discount pricing schedule, as follows:

Quantity	Price
1–49	$1,400
50–89	1,100
90+	900

The annual carrying cost for the bookstore for a PC is $190, the ordering cost is $2,500, and annual demand for this particular model is estimated to be 200 units. The bookstore wants to determine if it should take advantage of this discount or order the basic EOQ order size.

SOLUTION:

- First determine the optimal order size and total cost with the basic EOQ model.

EOQ = 73 units
Total cost for 73 units is $233,784
Total cost for 90 units is $194,105

$$TC = \frac{C_o D}{Q} + \frac{C_c Q}{2} + PD$$

where

P = per unit price of item

D = annual demand

Inventory Valuation Methods

- First in First Out (FIFO)

This method assumes for valuation purposes that the items received earliest are those which are issued first

- Last in First Out (LIFO)

This method assumes for valuation purposes that the latest price paid for items received is the one to be used to price issues

- Cumulative Weighted Average (AVCO)

This method calculates a weighted average price each time there is a receipt, using the formula:

$$\textit{Weighted average price} = \frac{\textit{(Value of inventory b/f + value of purchases)}}{\textit{(Quantity of inventory b/f + quantity purchased)}}$$

Inventory Valuation Methods

Date	Description	Qty	Price
1/9/2012	Bought	100	5.00
2/9/2012	Issued	50	
10/9/2012	Bought	50	5.50
20/9/2012	Issued	60	
27/9/2012	Bought	100	5.60

Comparison of FIFO, LIFO & AVCO

	Closing inventory valuation	*Value of issues*
• FIFO	780	555
• LIFO	760	575
• AVCO	770	565

- The values for AVCO in the table lie between those for LIFO and FIFO. This should always occur because AVCO is an averaging method.
- Both LIFO and FIFO require records to be kept of each batch of purchases so that the appropriate price may be attached to each issue.
- Price fluctuations are smoothed out with the AVCO method which makes the data easier to use for decision-making, although the rounding of the unit value might cause some difficulties.

Comparison of FIFO, LIFO & AVCO

- Many management accountants would argue that LIFO provides more relevant information for decision-making because it uses the most up-to-date price.
- However LIFO may sometimes confuse managers, since the pricing method represents the opposite to what is happening in reality, that is, the items in store will probably be physically issued on a FIFO basis.

Comparison of FIFO, LIFO & AVCO

If we assume that the items in the above example are items for resale, then using the FIFO method the cost of the items issued on 20 September was LKR305. If a customer offered you LKR315 for them you might well accept the offer on the basis that you had made LKR10 profit. If the LIFO method is used the offer would be rejected because the cost of the issue is stated to be LKR325 and thus to accept the customer's offer would be to make a loss. Which is correct?

It is reasonable to believe that in order to make a profit you should be able to replace the items that you have sold and still have some of the sale proceeds left over. In this example, the latest price paid on 10 September was LKR5.50 per unit and with the benefit of hindsight we know that the price on 27 September is LKR5.60 per unit. It is reasonable therefore to expect that the cost of replacing the items sold will be at least LKR5.50 per unit, which totals LKR330.

Thus, it can be seen that the use of the FIFO method would lead you to a decision which would cause you to be unable to replace the items sold with the sale proceeds received. **The use of the LIFO method is thus argued to be better for decision-making.**

Effect on Gross Profit

Continuing with the example, suppose that the units issued from inventory are sold direct to the customer for LKR8.00 per unit. The gross profit recorded under each of the inventory valuation methods would be as follows:

	FIFO	***LIFO***	***AVCO***
Sales revenue: 110 * 8	880	880	880
Purchases	1,335	1,335	1,335
(-) closing inventory	780	760	770
Cost of goods sold	555	575	565
Gross profit	**325**	**305**	**315**

Documents Used in Material Control

- **Goods Received Note (GRN)**

Document which is used to record the receipt of goods for the purpose of updating the stores ledger record. The information recorded on the GRN will include the quantity, code number and description of the material received, as well as the date of the delivery and the supplier's details.

- **Material Requisition Note (MRN)**

This document is used to record the issue of material on the stores ledger record. The information shown on the material requisition will include the quantity, code number and description of the items issued, as well as the date of the issue, the cost of the items issued (based on whatever inventory valuation method is in use: FIFO, LIFO, etc.) and the cost centre or the job number to be charged with the cost of the items issued.

Documents Used in Material Control

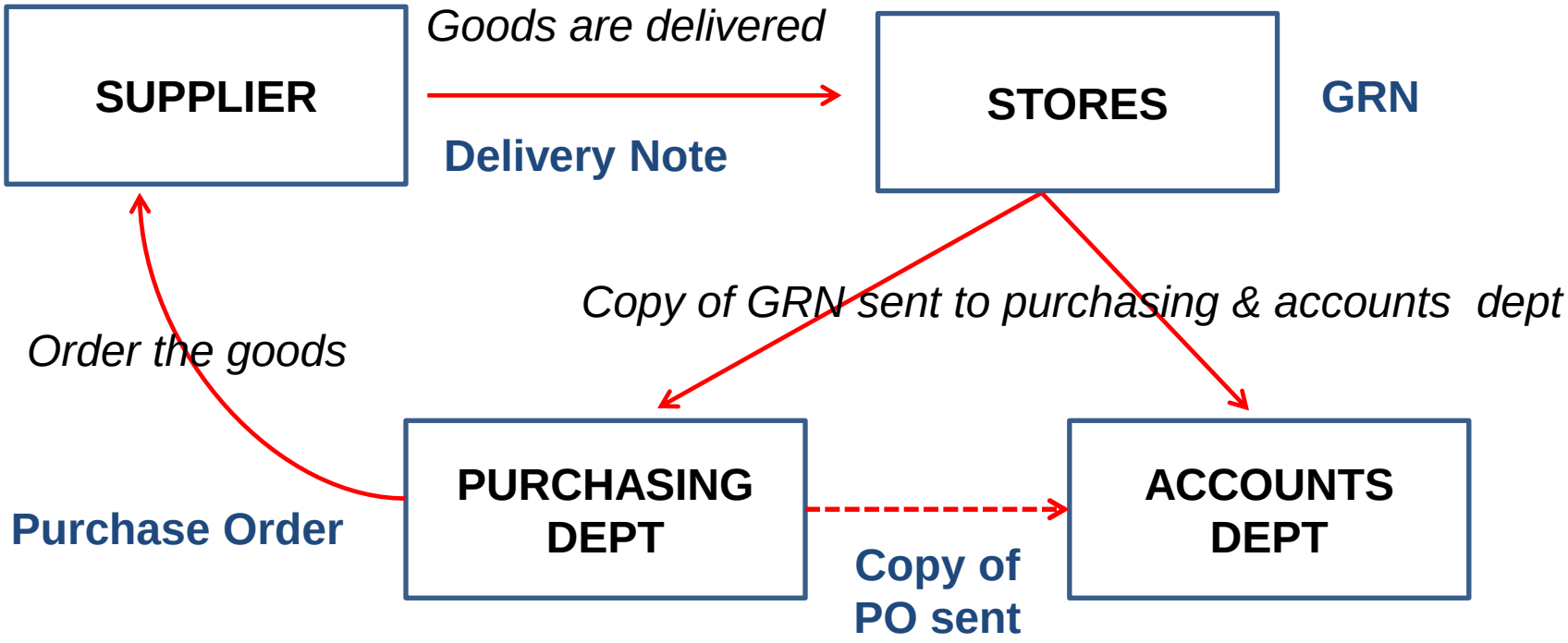
- **Material Returned Note**

Materials may be issued and subsequently found to be surplus to requirements. These will be returned to the stores and this movement of materials is recorded on this.

- **Material Returned Note (MRN)**

Occasionally, a cost centre might transfer material to another cost centre, without the material first being sent back to the stores. To ensure that the correct cost centre or job is charged with the cost of the materials a material transfer note is raised.

Documents Used in Material Control




ANY
QUESTIONS
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