

Cost Records for Material

Chapter 2.2

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Importance of inventory control

No
inventory

No Production

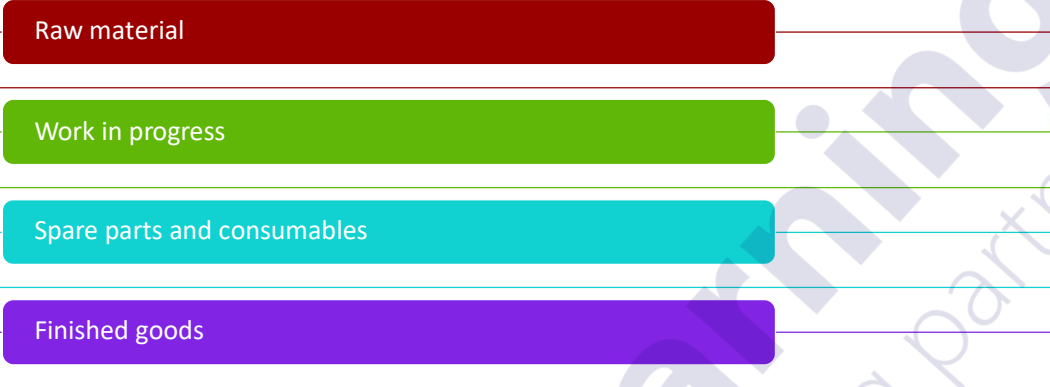
Idle resources

Lost of customers
and sales

Significant losses

- ✚ Profitability
- ✚ Cash flow
- ✚ Production efficiency
- ✚ Customer satisfaction

Inventories



The diagram illustrates the four types of inventory in a manufacturing process, arranged vertically. Each type is represented by a colored rectangular box with a corresponding colored line extending from its right side. The boxes are: a red box for 'Raw material', a green box for 'Work in progress', a cyan box for 'Spare parts and consumables', and a purple box for 'Finished goods'. The lines extend to the right, suggesting a flow or continuation of the process.

- Raw material
- Work in progress
- Spare parts and consumables
- Finished goods

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Inventory Control System

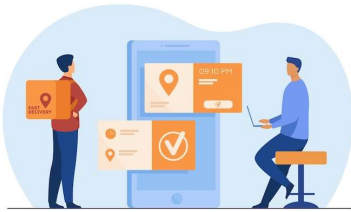
- Ordering and Receiving
- Storing and Handling
- Tracking and Monitoring
- Verification and Control

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- Ordering and Receiving
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Ordering and Receiving

Good material management ensures the **right materials**, in the **right quantity**, at the **right time**, and stored properly.



Ordering Procedures

- Reorder levels
- Supplier selection
- Purchase approvals
- Just-in-Time (JIT) where appropriate

Storing Systems

- Logical warehouse layout
- Environmental controls (temperature, moisture)
- Security and handling procedure

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Tracking and Verification

Once materials are received, they must be tracked accurately.



Tracking

- Perpetual inventory systems
- Barcode scanning / RFID

Verification

- Cycle counting
- Full stocktakes
- Investigating discrepancies

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Three Pillars of Material Management

- **Physical Control** – Tracking materials from receipt to usage
- **Quantitative Models** – Calculating optimal stock levels
- **Valuation Methods** – Accounting for inventory correctly

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Periodic Vs Perpetual Stock Taking

Periodic stock taking

- **Periodic** stocktaking is a process whereby all inventory items are physically counted and valued at a set point in time, usually at the end of an accounting period.

Perpetual stock taking

- **Continuous** stocktaking is counting and valuing selected items at different times on a rotating basis. This involves a specialist team counting and checking a number of inventory items each day, so that each item is checked at least once a year. Valuable items or items with a high turnover could be checked more frequently.

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Inventory Cost

Purchase Cost

Ordering cost (C_o)

Holding Cost (C_h)

Stock out Cost

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Inventory Cost

Purchasing cost

Purchasing cost of the value of material purchased and it is the amount to be paid to the supplier.

Ordering cost

In the EOQ model, order costs are the incremental costs of processing an order of goods from a supplier. This includes clerical cost associated with purchasing, transport cost, port charges, and inspection charges.

Holding Cost

Holding cost can be defined as the incremental cost which are incurred on holding the material at stores until they are consumed.

Ex: Rent, Insurance, electricity, Security, Stock taking cost, staff cost and etc..

Stockout Cost

Additional cost which may arise running out of inventory. These cost includes;

- Lost contribution from lost sales
- Lost future sales due to dissatisfied customers
- Loss customer goodwill
- Cost of production stoppage
- Labour frustration

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Objective of inventory control

The overall objective of inventory control is, therefore, to maintain inventory levels so that the total of the following costs is minimized.

- Holding costs
- Ordering costs
- Stockout costs

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Inventory Cost

- Ordering costs and carrying costs are quite **opposite** to each other. If we need to minimize carrying costs we have to place small order which increases the ordering costs.
- If we want minimize our ordering costs we have to place few orders in a year and this requires placing large orders which in turn increases the total carrying costs for the period.

Cost Type	Formula
Ordering Cost	$(\text{Annual Demand} \div \text{Order Quantity}) \times \text{Cost per Order}$
Carrying Cost	$(\text{Order Quantity} \div 2) \times \text{Carrying Cost per Unit}$
Stockout Cost	Estimated loss of contribution or emergency costs

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Economic Order Quantity

Is, the **order quantity** that minimizes the total inventory holding costs and **ordering** costs, when the inventory level is reached to re-order level.

It is one of the oldest classical production scheduling models. The framework used to determine this order quantity is also known as Wilson **EOQ** Model, Wilson Formula or Andler Formula.

EOQ can be calculated using following methods

Graphical method

Formula method

Tabulation method

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EOQ – Formula Method

- EOQ could be computed using the following formula which is the most accurate method.
- Inventory Cost = Ordering Cost + Holding Cost
- **Economic order theory assumes that the average inventory held is equal to buffer stock + half of the reorder quantity**

$$EOQ = \sqrt{\frac{2 \times D \times C_o}{C_h}}$$

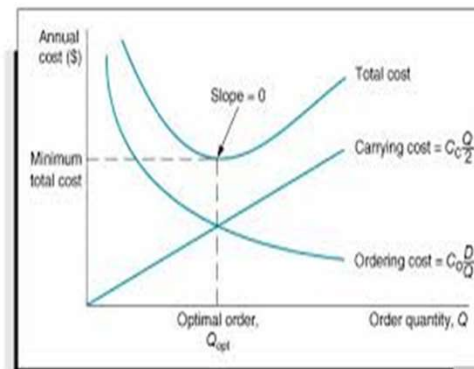
where

C_h	=	cost of holding one unit of inventory for one time period
C_o	=	cost of ordering a consignment from a supplier
D	=	demand during the time period

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EOQ – Graphical Method

Economic order quantity can also be determined through a graph. Here the above information is plotted in a graph for total ordering cost, total carrying cost and total cost at different ordering quantities.



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EOQ and Bulk Discount

- The solution obtained from using the simple EOQ formula may need to be modified if bulk discounts (also called quantity discounts) are available.
- Tabulation method could be used to calculate EOQ under bulk discounts.

Annual Requirement (Units)	No. of Orders	Order Size (Units)	Ordering Cost	Average Stock (Units)	Carrying Cost	Total Cost Rs.	Discount received Rs	Net Cost Rs.
2000	2	1000	200	500	250	450	(10)	440
2000	1	2000	100	1000	500	600	(13)	587

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Inventory Valuation

- In financial accounting stock should be stated at cost and net realizable value whichever is lower. Generally in costing, stock should be valued at cost. There are number of methods used to price the material issue and value the stock in hand.

Inventory Costing Formula

First In First Out (FIFO)

Last In First Out (LIFO)

Weighted Average Cost (WAC)

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Inventory Valuation

First in, First out (FIFO method)

- This method assumes that inventory purchased first is issued first. Therefore, inventory cost under FIFO method will be the cost of latest purchases.

Last in, First out (LIFO method)

- This method assumes that inventory purchased last is issued first. Therefore, inventory cost under LIFO method will be the cost of earliest purchases.

Weighted Average Cost (AVCO method)

- This method values inventory at the weighted average cost of all purchases. Average cost is calculated each time inventory is issued.

- **Weight Average Price = $\frac{\text{Value of Opening Stock} + \text{Value of Purchase}}{\text{Qty of opening stock} + \text{Qty of purchased}}$**

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Inventory Valuation – Impact on Financial Statements

Inventory valuation affects:

- **Cost of Goods Sold (COGS)**
- **Profitability**
- **Balance Sheet values**



When prices change over time, businesses must decide **which cost to assign** to goods sold.

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FIFO (First-In, First-Out)

Oldest stock is sold first.

• Effects in Rising Prices:

- Lower COGS
- Higher profit
- Higher ending inventory (near current prices)

Accepted under SLFRS

Calculation Procedure:

1. Identify the chronological order of purchases
2. Assign the oldest costs to Cost of Goods Sold first
3. Value ending inventory using the most recent purchase costs

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LIFO (Last-In, First-Out)

Newest stock is sold first.

Effects in Rising Prices:

- Higher COGS
- Lower profit
- Lower inventory value

⚠ Not allowed under **SLFRS** (and not permitted in Sri Lanka).

Calculation Procedure:

1. Identify the chronological order of purchases
2. Assign the newest costs to Cost of Goods Sold first
3. Value ending inventory using the oldest purchase costs

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Weighted Average Cost (WAC)

All units are valued at the **average cost**.

- **Effects:**

- Smooths price fluctuations
- Produces results between FIFO and LIFO

Accepted under SLFRS

Calculation Procedure:

1. Calculate total cost of goods available for sale
2. Divide by total units available for sale to get weighted average cost per unit
3. Apply this average cost to both COGS and ending inventory

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Questions

Case Study 1: Controlling Raw Material in a Manufacturing Environment (Focus: Physical Control + EOQ)

Background

GreenWood Furniture (Pvt) Ltd manufactures wooden office desks. Timber is its primary raw material and represents the largest portion of production cost. Management has noticed frequent **stockouts** in peak months and **excess stock** during off-peak periods. Storage space is also limited.

According to the study text, effective material management must balance **physical control**, **quantitative planning**, and **financial efficiency**

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- **Current Information**

- Annual demand for timber: **24,000 planks**
- Ordering cost per order: **LKR 12,000**
- Carrying cost per plank per year: **LKR 150**
- Warehouse capacity: **4,000 planks**
- Average lead time: **2 weeks**
- Current practice: Orders placed whenever stock “looks low” (no formal system)

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- **Student Tasks**

- **A. Physical Control**

- Identify weaknesses in GreenWood’s current inventory system.
- Propose improvements using:
 - Reorder levels
 - Perpetual inventory records
 - Cycle counting / stock verification
(as discussed under stock management and tracking procedures)
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- **B. Quantitative Model – EOQ**

- Using the EOQ formula from the text:

- $EOQ = \sqrt{\frac{2DO}{C}}$

- Where:

D = 24,000 planks

O = 12,000

C = 150

- Calculate the **EOQ**.

- Determine:

- Number of orders per year
- Average inventory level

- Comment on whether the EOQ quantity fits within the warehouse capacity.

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- **C. Managerial Interpretation**

- Explain how adopting EOQ will reduce:

- Ordering costs
- Carrying costs
- Stockout risk

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Case Study 2: Inventory Valuation in a Retail Business

- (Focus: Valuation Methods – FIFO vs Weighted Average)
- **Background**
 - UrbanStyle Clothing (Pvt) Ltd is a retail fashion company importing denim jackets. Due to currency depreciation and supplier price increases, the cost of jackets has risen over the last three months. The Finance Manager must value ending inventory for financial reporting.
 - The study text explains that inventory valuation affects **COGS, profit, and balance sheet values**, and that businesses must choose a consistent method such as FIFO or Weighted Average

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Date	Quantity	Unit Cost (LKR)
Opening Stock	200 units	3,000
Purchase – Jan	300 units	3,200
Purchase – Feb	400 units	3,400
Total Available	900 units	
Units Sold	500 units	
Ending Inventory	400 units	

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- Selling price per jacket: **LKR 4,500**

- **Student Tasks**

- **A. FIFO Valuation**

- Compute **Cost of Goods Sold (COGS)** using FIFO.
- Calculate **Ending Inventory** under FIFO.
- Determine **Gross Profit**.
- *(Refer to FIFO principles: older costs are charged to COGS, ending inventory reflects recent prices)*
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- **B. Weighted Average Cost (WAC)**

- Compute:
 - Average cost per unit
 - COGS using WAC
 - Ending Inventory using WAC
 - Gross Profit
- *(Refer to Weighted Average method: all units valued at the same blended cost)*
- *Cost Records for Material*

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- **C. Analysis and Discussion**

- Compare FIFO vs WAC in terms of:
 - Reported profit
 - Inventory value
 - Tax implications
- Advise management:
 - Which method better reflects **current costs**?
 - Which method provides **stable earnings**?
- State which methods are **permitted under IFRS / SLFRS**.

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