Inventory Accounting

Inventories

- Generally constitute the largest Current asset & the second largest asset (after fixed assets) in the financial statements of manufacturing & merchandizing firms
- Raw material
- WIP
- Finished Goods
- Stock-in trade (for merchandizing)
- Stores & spares (factory supplies – coolants, machine spares, packaging materials, etc.)

Matching Inventory Cost with Revenues

- COGS = Cost of goods available for sale (-) Closing Inventory
- Gross Profit = Net Sales (-) COGS
- Cost assigned to closing inventory directly affects the reported profit – an overstated ending inventory enhances profit & vice versa- Inventory valuation affects both IS & BS
- Matching principle - recognizing COGS as expense & closing inventory as CA - in the reporting period

Determination of Merchandise Inventory

1. **Periodic Inventory System:** A physical count is made of merchandise in the ending inventory account & the cost of inventory is determined. Thus, accounts such as Purchases, purchase returns, Allowances & Freight In are maintained separately.

2. **Perpetual Inventory System:** A continuous record of all purchases & sale of merchandise, resulting in constant updating the amount of inventory on hand. Here, accounts such as Purchases, purchase returns, Allowances & Freight In are not maintained – instead a single Merchandise Inventory account is operated.

Periodic Inventory System

- Net Purchases = Purchases, less returns & allowances (for defective merchandise), discounts (for prompt payment)

1. For purchases: Debit Purchases; Credit Trade payables/ Creditors
2. For Returns & Allowances: Debit Trade Payables; Credit Purchase Returns & Allowance
3. For Purchase Discounts: (for example- Purchase Rs.1,000 with 2/10, net 30)

i. September 01 – Debit Purchases – Rs.1,000; Credit Trade Payable – Rs.1,000

ii. September 09 – Debit Trade Payable – Rs.1,000;
Credit Cash – Rs.980; &
Credit Purchase Discount – Rs.20

Periodic Inventory System……………..

- Freight on Purchases: A separate Freight-In account is used to record inward freight charges incurred on purchases
- Debit Freight-In Expense; Credit Cash
- Normal balance of a Freight In A/c is a debit – it is an Adjunct Account; an account the balance of which is added to the balance of other account i.e. the Purchase Account
- *Adjunct Account is just the opposite of a Contra Account, balance of which is deducted from another account*
- Inventory in transit (decision about payment of freight): Ownership of goods passes to buyer at FOB point

1. FOB Shipping Point: buyer pays freight – buyer should include goods in transit at year end in its ending inventory
2. FOB Destination: seller pays freight- seller should include goods in transit at year end in its ending inventory

- Inventory Losses: Theft, Spoilage, shoplifting, employee theft etc. – Under Periodic system, such losses are automatically included in the COGS

Periodic Inventory System…………….Computation of COGS

- In most of the small merchandizing firms, inventory is maintained under Periodic Inventory System. The COGS under this system shall be:

Opening Inventory

Add, Purchases

Less, Purchases Returns &Allow.; & Discounts

Net Purchases

Add, Freight In

Net Cost of Purchases

Cost of Goods available for sale

Less, Closing Inventory

Cost of Goods Sold

Test Your Understanding

- For the year ended March 31, 20XX, Vishal company sold goods for Rs.7,17,000. Its gross profit ratio is 40%. The following information are available:

- Sales Return & Allowances – Rs.17,000; Beginning Inventory – Rs.40,000; Purchases – Rs. 4,18,000; Purchase returns & Allowances – Rs.6,000; Freight In – Rs.23,000

- Calculate the ending inventory

WALKERS' DELIGHT

- Invested ₹70,00,000 in cash, of which 40% was obtained from Canara Bank as LT loan @ 7.5%
- Used ₹21,00,000 to buy the stores equipment, having a life of 5 years without any salvage value
- Opened for business on August 1
- During the month, paid ₹219,45,000 for merchandise
- ₹11,90,000 towards operating expenses
- Used ₹38,50,000 of the business for purchasing an apartment

Balance Sheet as on August 31, 20xx

Assets		(In ₹)
Cash		58,80,000
Debtors		81,20,000
Merchandise Inventory		61,25,000
Stores Equipment	21,00,000	
Less, Depreciation	(35,000)	20,65,000
		221,90,000
Liabilities & OE		
Creditors (for merchandise)		68,60,000
LT Loan (Canara Bank)		28,00,000
Ankur, Capital		125,30,000
		221,90,000

Calculate (a) Collection from customers, (b) Total Sales, (c) COGS & (d) the Net Profit (the Income Statement of August)

Costing of COGS & Closing Inventory

Units of a specific item may be procured at different prices on different dates – so, cost needs to be assigned to inventory items used under COGS & remained unused under Closing Inventory at the end of the accounting period

Sept 1: Op Inventory – 1,000 units @ Rs.20
Sept 2: Issue – 950 units
Sept 4: Purchase – 800 units @ Rs.23
Sept 6: Issue – 790 units
Sept 7: Purchase – 900 units @ Rs.25
Sept 10: Issue - 875 units
Sept 11: Purchase – 800 units @ Rs.27
Sept 18: Purchase – 500 units @Rs.28
Sept 19: Issue – 1085 units

Inventory Costing Methods

1. Weighted Average Cost (WAC) Method
2. First-in, First-out (FIFO) Method
3. Last-in, First-out (LIFO) Method
4. Specific Identification Method

1. WAC Method

- Appropriate when the goods available for sale are homogenous or when it is difficult to make a cost flow assumption
- The WAC unit cost is applied to the units in the ending inventory
- Criticism – Assigns no importance to current prices than past prices paid several days/ months ago
- With the same example: What are the COGS & Cost of Closing Inventory?

2. FIFO Method

- First units acquired are first units sold
- The cost of ending inventory is that of the most recent purchases – inventory value reflects the conditions prevalent in the balance sheet
- Criticism – Improper matching of cost with revenue since the COGS is computed on the basis of old prices – unrealistic
- Under inflation, FIFO produces higher net profit - from matching current revenues with low purchase price paid in the past

- With the same example: What are the COGS & Cost of Closing Inventory?

3. LIFO Method

- Assumes that last units acquired are the first units sold - so the cost in the ending inventory is that of the earliest purchases
- Ensures that current revenues are matched with the most recent purchase prices, thus resulting in realistic reported profits
- Criticism – Balance sheet value of inventories may be outdated & unrealistic
- With the same example: What are the COGS & Cost of Closing Inventory?
- Issues: In inflation LIFO produces lower net profit, pay less income tax & accumulate more cash for investment
- COGS may be charged with very low prices paid in earlier years
- Firm to pay more tax on the difference between the current price & the old LIFO cost
- Firms using LIFO must replenish inventory timely to avoid unnecessary inventory accumulation (JIT Approach)

4. Specific Identification Method

- Assigns specific costs to each unit sold and each unit on hand – may be used if the units in the ending inventory can be identified as coming from specific purchases
- Particularly suited to inventories of high-value, low-volume items, e.g. automobiles, jewellery, designer dresses etc. – each unit in inventory must be affixed with an identification tag
- The COGS is computed by subtracting the ending inventory from cost of goods available for sale
- It matches the cost to the physical flow of inventory & eliminates the effect of cost flow assumptions on reported net profit
- With the same example: What are the COGS & Cost of Closing Inventory?

Income Statement under different methods

Particulars	WAC(Rs)	FIFO (Rs)	LIFO (Rs)	Specific Identification (Rs)
Sales @ Rs.30	1,10,000	1,10,000	1,10,000	1,10,000
Less, COGS				
Opening Inventory	20,000	20,000	20,000	20,000
Add, Purchases	76,500	76,500	76,500	76,500
Goods available for sale	96,500	96,500	96,500	96,500
Less, Closing Inventory	(7,238)	(8,400)	(6,000)	(7,445)
Total COGS	89,262	88,100	90,500	89,055
Gross Profit	20,738	21,900	19,500	20,840

Prices	Ending Inventory	COGS	Gross Profit
Increasing	FIFO > WAC > LIFO	LIFO > WAC > FIFO	FIFO > WAC > LIFO
Constant	FIFO = WAC = LIFO	FIFO = WAC = LIFO	FIFO = WAC = LIFO
Decreasing	LIFO > WAC > FIFO	FIFO > WAC > LIFO	LIFO > WAC > FIFO

Comparing Alternative Methods

1. In a period of constant prices, all four methods show identical results
2. FIFO inventory value is more realistic since it is closer to the current cost, but it produces a net profit unrelated to current input costs
3. LIFO does a fair job of matching current selling prices & COGS, which is closer to current replacement costs, but often produces an outdated inventory value
4. Both LIFO and WAC allow a business to manipulate net profit by changing the timing of additional purchases
5. For income tax purposes – any method of inventory valuation is acceptable for accounting – Once adopted, the method must be followed consistently

Perpetual Inventory System

- A continuous record of all purchases & sale of merchandise, resulting in constant updating of the COGS & Closing inventory

- Example:
- Sept 1: Op Inventory – 1,000 units @ Rs.20
- Sept 2: Issue – 950 units
- Sept 4: Purchase – 800 units @ Rs.23
- Sept 6: Issue – 790 units
- Sept 7: Purchase – 900 units @ Rs.25
- Sept 10: Issue - 875 units
- Sept 11: Purchase – 800 units @ Rs.27
- Sept 18: Purchase – 500 units @Rs.28
- Sept 19: Issue – 1085 units

Date Sept	Particulars	Purchase			Issue			Balance		
		Qty	@	Cost	Qty	@	Cost	Qty	@	Cost
1	Op. balance	-	-	-	-	-	-	1000	20	20,000
2	Issue (FIFO) – 950 units	-	-	-	950	20	19,000	50	20	1,000
4	Purchase	800	23	18,400	-	-	-	50 800	2023	1,000 18,400
6	Issue (FIFO)- 790 Units	-	-	-	50 740	20 23	1,000 17,020	60	23	1,380
7	Purchase	900	25	22,500	-	-	-	60 900	23 25	1,380 22,500
10	Issue (FIFO) – 875 units	-	-	-	60 815	23 25	1,380 20,375	85	25	2,125
11	Purchase	800	27	21,600	-	-	-	85 800	25 27	2,125 21,600
18	Purchase	500	28	14,000	-	-	-	85 800 500	25 27 28	2,125 21,600 14,000
19	Issue (FIFO) – 1085units	-	-	-	85 800 200	25 27 28	2,125 21,600 5,600	300	28	8,400
				Total	3,700	-	88,100 COGS	300		8,400 Cl. Inv

Periodic vs. Perpetual Systems

- As per matching concept both the approaches match COGS with Sales revenue.
- Under Periodic Inventory System, ending inventory is obtained by a physical count, and the COGS is obtained by deduction
- Under Perpetual Inventory System, both amounts are obtained directly from inventory records
- Perpetual Inventory System does not require Purchases A/C, Purchase Return & Allowances A/C s as these are recorded in Merchandise Inventory Account.
- Perpetual Inventory System uses a COGS A/C to record cost of Merchandise sold.
- No entry is required to record the closing Inventory under Perpetual Inventory System – Closing entries simply transfer the balance in COGS A/C to Statement of Profit & Loss
- Under both inventory systems, the sales account must be closed

Accounting under Periodic vs. Perpetual Systems

Periodic

- Purchased on credit 30 calculators@ ₹400

  Debit Purchases……12,000

  Credit Payables………….12,000
- Sold 24 units @ Rs.600 for cash

  Debit Cash…………14,400

  Credit Sales Rev……….. 14,400
- Returned 5 units to supplier

  Debit Payables……..2,000

  Credit Purchase Ret……2,000
- Paid supplier in full

  Debit Payables…….10,000

  Credit Cash……………..10,000
- Unsold Inventory - 01

Perpetual

- Purchased on credit 30 calculators @ ₹400

  Debit Inventory……12,000

  Credit Payables………….12,000
- Sold 24 units @ Rs.600 for cash

  Debit Cash…………14,400

  Credit Sales Rev………..14,400

  Debit COGS…………9,600

  Credit Inventory………..9,600
- Returned 5 units to supplier

  Debit Payables……..2,000

  Credit Inventory……2,000
- Paid supplier in full

  Debit Payables…….10,000

  Credit Cash……………..10,000

Inventory Valuation

- Inventory may be reported below cost sometimes due to loss owing to damage, deterioration, obsolescence or fall in market prices
- Lower of Cost-or-Market (LCM) Principle
- Closing inventory should be valued at the lower of cost & net realizable value (NRV) – in consonance with the principle that assets should not be carried in excess of amounts expected to be realized from their sale or use.

- Estimating Inventory Value (required for reporting for different time horizons within the accounting period viz. half-yearly; quarterly etc.)

1. Retail Inventory Method
2. Gross Profit Method
3. Standard Cost Method

(1) Retail Inventory Method

- Used by large merchandizing firms & Supermarkets – items marked with different selling prices
- Estimating the value of ending inventory:
  1. Compute the amount of goods available for sell, both at cost & retail
  2. Divide the ‘goods available for sale at cost’ by the ‘goods available at retail’ to obtain cost to retail ratio
  3. Deduct sales from ‘goods available for sale at retail’ to determine the ending inventory at retail
  4. Multiply the ending inventory at retail by the ‘ratio of cost to retail’ to convert the inventory to cost
- The method assumes that ending inventory consists of same mix of goods as contained in the ‘goods available for sale & the selling price of merchandise originally set do not change

Retail Inventory Method - Example

Steps	Particulars	At Cost (Rs.)	At Retail (Rs.)
	Beginning Inventory	3,20,000	4,00,000
	Net Purchases (Gross Purchases; less, Dis, Ret & Allow)	10,60,000	14,00,000
Step - 1	Goods available for sale	13,80,000	18,00,000
Step - 2	Ratio of Cost to retail	13,80,000/ 18,00,000 = 0.76	
	Less, Net Sales (Gross Sales; less, Dis, Ret & Allow)		(11,60,000)
Step - 3	Estimated ending inventory at Retail		6,40,000
Step - 4	Estimated ending inventory at Cost	4,86,400	(i.e. 6,40,000 * 0.76)

(2) Gross Profit Method - variant of Retail Inventory Method

- Assumption: the % of gross profit to net sales remains approximately the same from one period to another
- Useful in estimating inventory lost or destroyed by fire, flood, theft, when proper inventory records are nor available or have been destroyed
- Process:
- Compute the cost of goods available for sale
- Estimate the COGS by deducting the estimated gross profit from sales
- Deduct the estimated COGS from the cost of goods available for sale to arrive at the estimated ending inventory

- Example:
- Beginning Inventory……………….₹3,20,000
- Net Purchases…………………….10,00,000
- Cost of goods available for sale…..13,20,000
- Less, estimated COGS:
- Net sales………………………….11,60,000
- Less, estimated gross profit (20% Gross Profit) – (2,32,000)
- Estimated COGS……………………9,28,000
- Estimated cost of ending inventory……………………………3,92,000

Standard Cost Method

- Uses a predetermined cost of making a product – based on standards for material consumption & prices, labour efficiency & wage rates, and expected level of operations laid down by the management

Financial Analysis of Inventories

- Inventory turnover to maintain continuity in production or supply chain activities – effectively managing the operating cycle

- Inventory Turnover = $\frac{COGS}{(Opening\ Inventory+Closing\ Inventory)/2}$