

Chapter 7: Reporting and Interpreting Cost of Goods Sold and Inventory

CHAPTER SUMMARY

Costs flow into inventory when goods are purchased or manufactured, and flow out when the goods are sold. To abide by the matching principle, the total cost of the goods sold during the period must be matched with the sales revenue earned during the period. Cost of Goods Sold measures the cost of inventory that was sold, and Sales Revenue measures the revenue produced by that same inventory. When cost of goods sold is deducted from sales revenue for the period, the difference is called gross profit or gross margin on sales. The remaining expenses are deducted from gross profit to derive net income.

This Chapter focuses on the problem of measuring cost of goods sold and ending inventory when unit costs change during the period. Inventory should include all the items held for resale that the entity owns. When there are different unit cost amounts, a rational and systematic method must be used to allocate costs to the units remaining in inventory and to the units sold. This chapter discusses four different inventory-costing methods and their applications in different economic circumstances. The methods discussed are specific identification, FIFO, LIFO, and average cost. Each of the inventory costing methods is in conformity with GAAP. The selection of a method of inventory costing is important because it will affect reported income, income tax expense (and, therefore, cash flow) and the value of inventory reported on the balance sheet. In a period of rising prices, FIFO normally results in a higher net income than LIFO. In a period of falling prices, the opposite result occurs. Public companies using LIFO provide footnote disclosures that allow conversion of inventory and cost of goods sold to FIFO amounts.

Ending inventory should also be measured on the basis of the lower of actual cost or replacement cost (lower of cost or market basis), which can have a major effect on the statements of companies facing declining costs. Also, damaged, obsolete, and deteriorated items in inventory should be assigned a cost that represents their current estimated net realizable value if that is below cost.

Two inventory systems are discussed for keeping track of the ending inventory and cost of goods sold for the period:

- (a) The perpetual inventory system, which is based on the maintenance of detailed and continuous inventory records for each kind of inventory stocked, and
- (b) The periodic inventory system, which is based on a physical count of ending inventory and the costing of those goods to determine the proper amounts for cost of goods sold and ending inventory.

CHAPTER OBJECTIVES

LO1 Apply the cost principle to identify the amounts that should be included in inventory and the matching principle to determine cost of goods sold for typical retailers, wholesalers, and manufacturers.

LO2 Report inventory and cost of goods sold using the four inventory costing methods.

LO3 Decide when the use of different inventory costing methods is beneficial to a company.

LO4 Report inventory at the lower of cost or market.

LO5 Evaluate inventory management using the inventory turnover ratio and the effects of inventory on cash flows.

LO6 Compare companies that use different inventory costing methods.

LO7 Understand methods for controlling and keeping track of inventory and analyze the effects of inventory errors on financial statements.

CHAPTER OUTLINE

- I. UNDERSTANDING THE BUSINESS**
 1. Inventory is a major concern to all merchandisers and manufacturers.
 2. Beginning and ending inventories are used in the calculation of cost of goods sold on the income statement.
 3. A good accounting system is an important factor to furnish information for proper inventory management. It should provide for accurate data, timely information, and the protection of the inventory assets.

- II. LO1 APPLY THE COST PRINCIPLE TO IDENTIFY THE AMOUNTS THAT SHOULD BE INCLUDED IN INVENTORY AND THE MATCHING PRINCIPLE TO DETERMINE COST OF GOODS SOLD FOR TYPICAL RETAILERS, WHOLESALERS, AND MANUFACTURERS.**
 - A. Items Included in Inventory**
 1. Inventory is tangible property that is
 - a. Held for sale in the normal course of business, or
 - b. Used to produce goods or services for sale.
 2. It is reported on the balance sheet as a current asset, below Cash, Marketable Securities, and Accounts and Finance Receivables because it is less liquid than those assets.
 3. The types of inventory normally held depend on the characteristics of the business.
 - a. Merchandise inventory includes goods (merchandise) held for resale in the ordinary course of business. These goods are usually in a finished condition when acquired.
 - b. Raw materials inventory (RM) includes items acquired for processing into finished goods. These items are included in raw materials until used, at which point they become part of work in process inventory.
 - c. Work in process inventory (WIP) includes goods in the process of being manufactured but not yet complete. When completed, work in process inventory becomes finished goods inventory.
 - d. Finished goods inventory (FG) is manufactured items that are complete and ready for sale.

 - B. Costs Included in Inventory Purchases**
 1. Goods in inventory are initially recorded at cost.
 2. Inventory cost includes the purchase price, plus any other costs incurred in bringing the inventory item to usable or salable condition and location. Cost accumulation should cease when the item is ready for use (raw materials) or ready for shipment (merchandise inventory).
 3. Flow of inventory costs
 - a. Merchandiser
 1. Cost to acquire
 - a. Price paid (or cash equivalent)
 - b. Freight-in (transportation)
 - c. Other costs to make it ready for sale
 2. Merchandiser activities
 - a. Purchase: increase merchandise inventory (at cost)
 - b. Sale: decrease merchandise inventory (at cost) and increase cost of goods sold (at cost)
 - b. Manufacturer
 1. Costs to make (manufacture)
 - a. RM used including freight-in
 - b. Direct labor costs for wages of persons working directly on the transformation of raw materials into finished goods
 - c. Factory overhead costs (which include costs other than direct materials and direct labor costs) are costs associated with and necessary for production. Costs include factory rent, factory utilities, factory supervision, and patent amortization

2. Manufacturer activities
 - a. Raw material purchase: increase raw materials inventory at cost
 - b. Raw material use: decrease RM at cost and increase WIP at cost.
 - c. Direct labor incurred: increase WIP at cost
 - d. Factory overhead incurred: increase WIP inventory at cost
 - e. Manufacturing completed: decrease WIP at cost and increase FG at cost
 - f. Sell: decrease FG at cost and increase cost of goods sold at cost

C. Nature of Cost of Goods Sold

1. The cost (to the seller) of the items that were sold.
2. Subtracted from net sales on the income to derive gross profit.

	Beginning inventory	
+	Cost of purchases of merchandise during the period	
	Goods available for sale	
-	Ending inventory	
	Cost of goods sold	

3. Note that the ending inventory from one accounting period becomes the beginning inventory of the next period.

III. LO2 REPORT INVENTORY AND COST OF GOODS SOLD USING THE FOUR INVENTORY COSTING METHODS.

A. Cost Flow Assumptions

1. The inventory costing methods are alternative ways to assign the total dollar amount of goods available for sale between
 - a. Ending inventory, and
 - b. Cost of goods sold
2. There are four basic inventory costing methods; each provides an alternative way of assigning the cost of goods available to cost of goods sold and ending inventory.

B. Inventory Costing Methods

1. Specific Identification
 - a. This method tracks the specific items sold and on hand. The specific item prices are traced to purchase invoices via serial numbers or detailed descriptions.
 - b. Special coding (such as bar codes) facilitates the use of this method.
 - c. This method is usually used for high cost items whose features tend to vary rather significantly. Car dealerships and jewelers commonly use this method. It is often impractical for companies selling large quantities of similar items to use this method.
2. First-In, First-Out Method (FIFO)
 - a. Assumes the first costs in are the first costs out; therefore, the remaining costs (ending inventory) would be comprised of the latest purchases.
 - b. The oldest costs are included in cost of goods sold
 - c. The newest costs are included in ending inventory.
3. Last-In, First-Out Method (LIFO)
 - a. Assumes the last costs in are the first costs out; therefore, the remaining costs (ending inventory) would be comprised of the earliest purchases.
 - b. The newest costs are included in cost of goods sold
 - c. The oldest costs are included in ending inventory.

4. Average Cost Method
 - a. Uses the weighted average unit cost of the goods available for sale for both cost of goods sold and ending inventory.

$$\text{Average cost per unit} = \frac{\text{Cost of goods available for sale (dollars)}}{\text{Quantity available for sale (units)}}$$

- b. This method uses a weighted-average rather than a simple average.
- c. Produces results between the FIFO and LIFO methods.

C. Financial Statement Effects of Inventory Methods

1. All four methods are acceptable for GAAP and tax laws. Each is rational and systematic.
2. In times of changing prices, each method will produce differences in net income, stockholders' equity, and asset valuation amounts.

Financial statement effects in times of rising costs		
	FIFO	LIFO
Cost of goods sold on income statement	Lower	Higher
Net income	Higher	Lower
Income taxes	Higher	Lower
Inventory on balance sheet	Higher	Lower

3. The opposite effects will occur in times of decreasing costs.
4. The average cost method produces amounts between the FIFO and LIFO extremes.
5. A company may use different methods for different types of inventory items.
6. The method does not have to reflect the physical flow of inventory.

IV. LO3 DECIDE WHEN THE USE OF DIFFERENT INVENTORY COSTING METHODS IS BENEFICIAL TO A COMPANY.

A. Managers' Choice of Inventory Methods

1. Two factors contribute to the selection of accounting methods:
 - a. Net income effects and
 - b. Income tax effects (least-latest rule).
2. A company may choose different inventory methods for financial statement reporting and for tax reporting.
3. LIFO conformity rule: if LIFO is used for tax purposes, it must be used for financial reporting purposes.
4. LIFO
 - a. Widely used by U.S. companies. This method selection is largely driven by income deferrals under the American tax system.
 - b. Matches current costs to current sales.
 - c. Balance sheet valuation presents older costs.
5. FIFO
 - a. Provides for current valuations on the balance sheet.
 - b. Matches older costs to current sales on the income statement.
6. A company should apply the method(s) consistently for comparability from one period to another. However, changes in methods may be made to improve the measurement of financial results and financial position. In this case, full disclosure requirements must be met.

- V. LO4 REPORT INVENTORY AT THE LOWER OF COST OR MARKET.**
1. Inventory is initially recorded using the cost principle.
 2. Lower of Cost or Market (LCM) is a departure from the cost principle based on the conservatism constraint.
 - a. If replacement cost is lower than actual cost, LCM must be used for balance sheet reporting.
 - b. If net realizable value (selling price less costs to sell) is lower than actual cost, LCM must be used for balance sheet reporting.
 - c. The application of LCM may be on the inventory in total or on each item in inventory. The latter is a more conservative approach.
 - d. If a LCM adjustment is needed, the "write-down" loss- known as a holding loss – is reflected currently as an increase in cost of goods sold on the income statement.
 - e. Holding losses (write-downs) are recognized in the current period, but holding gains (write-ups) are not recognized.

VI. LO5 EVALUATE INVENTORY MANAGEMENT USING THE INVENTORY TURNOVER RATIO AND THE EFFECTS OF INVENTORY ON CASH FLOWS.

A. Measuring Efficiency in Inventory Management

1. Inventory turnover measures the liquidity (nearness to cash) of inventory. Inventory turnover reflects how many times average inventory was produced and sold during the period.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

- a. Average inventory is estimated as follows:

$$\text{Average inventory} = \frac{\text{Beginning inventory} + \text{Ending inventory}}{2}$$

2. Inventory management is the responsibility of managers within a company.
 - b. It is a joint effort and is key to a company's survival and success.
 - c. A company should not have too little inventory or it may lose sales.
 - d. On the other hand, a company should not have too much inventory or it will experience additional storage costs and it may lead to losses if it cannot be sold at normal prices.

B. Inventory presentation

1. Ending inventory is presented on the Balance Sheet as a current asset.
2. Both beginning and ending inventory are used in a detailed Income Statement.

C. Inventory and Cash Flows

1. When a net decrease in inventory for the period occurs, sales are greater than purchases, and the decrease must be added in computing cash flows from operations.
2. When a net increase in inventory for the period occurs, sales are less than purchases, and the increase must be subtracted in computing cash flows from operations.

VII. LO6 COMPARE COMPANIES THAT USE DIFFERENT INVENTORY COSTING METHODS.

A. Inventory Methods and Financial Statement Analysis

1. When different companies use different methods for costing inventory, comparing those companies can be difficult and misleading.
2. A company's disclosure regarding inventory methods used allows analysts to convert the reported information to that of another inventory method.
3. The excess of FIFO over LIFO inventory (commonly referred to as LIFO Reserve) is helpful for conversions. LIFO Reserve is a contra asset for the excess of FIFO over LIFO inventory.

B. Converting the Income Statement to FIFO

	Beginning LIFO Reserve (Excess of FIFO over LIFO)
-	Ending LIFO Reserve (Excess of FIFO over LIFO)
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	Difference in Cost of Goods Sold under FIFO
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C. Converting Inventory on the Balance Sheet to FIFO

	Inventory valued at LIFO
+	LIFO Reserve
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	Inventory valued at FIFO
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D. Since FIFO Cost of Goods Sold is lower, income before taxes is higher. This results in a higher income tax expense. To adjust:

	Difference in Cost of Goods Sold under FIFO
x	Tax Rate
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	Difference in Tax Expense under FIFO
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E. In order to determine the impact on Net Income, both the Difference in Cost of Goods Sold under FIFO and the Difference in Tax Expense under FIFO must be netted.

VIII. LO7 UNDERSTAND METHODS FOR CONTROLLING AND KEEPING TRACK OF INVENTORY AND ANALYZE THE EFFECTS OF INVENTORY ERRORS ON FINANCIAL STATEMENTS.

A. Internal Control of Inventory

1. Inventory is the second (after cash) most vulnerable to theft asset.
2. Control features include:
 - a. Separation of responsibilities for inventory accounting and physical handling of inventory.
 - b. Storage of inventory in a manner that protects it from theft and damage.
 - c. Limiting access to inventory to authorized employees.
 - d. Maintaining perpetual inventory records.
 - e. Comparing perpetual records to periodic physical counts of inventory.

B. Perpetual and Periodic Inventory Systems

1. Perpetual
 - a. Up-to-date records are kept for inventory and cost of goods sold.
 - b. Physical counts of inventory are performed to validate the inventory account.
 1. The count does not need to coincide with the company's year-end.
 2. Any discrepancies between the physical count and the accounting records will result in an adjustment to the inventory account.
 3. These differences may result from errors or theft.
 - c. The cost of goods acquired during the period is a direct increase to the inventory account. The Purchases account is not used.
 - d. The cost of goods sold during the period is a direct decrease to the inventory account. In addition, a cost of good sold account is increased for a like amount.
2. Periodic
 - a. No up-to-date record exists for inventory.
 - b. Physical count of inventory at year-end is required to derive the ending inventory amount.
 - c. Goods acquired during the period are accumulated in the Purchases account.
 - d. Cost of goods sold cannot be calculated until a physical count of the inventory is performed and an ending inventory value is determined.
 - e. Since no up-to-date record exists for inventory, a physical count will not reveal and discrepancies due to error or theft.
3. Perpetual inventory records and cost flow assumptions in practice
 - a. Normally FIFO or estimated average (or standard) cost basis is used for systems that keep track of the costs of individual items or lots.
 - b. Perpetual records are rarely kept on a LIFO basis.

C. Errors in Measuring Ending Inventory

1. Both clerical errors and fraudulent inventory amounts cause misstatements on the income statement and balance sheet.
 - a. Clerical errors are unintentional mistakes.
 - b. Fraud is an intentional misstatement of amounts.
 - c. Erroneous amounts for inventory can have major impacts on both the income statement and balance sheet.
2. It is important to understand the two components of goods available for sale: Ending Inventory and Cost of Goods Sold.
3. Ending inventory error for the current year: Income Statement (IS), Statement of Stockholders' Equity (SSE) or Statement of Retained Earnings (SRE), and Balance Sheet (BS) are all incorrect.
4. If ending inventory errors are not caught and corrected, then beginning inventory for the next year is incorrect. This will cause the Income Statement and Statement of Stockholders' Equity to be incorrect, but Balance Sheet at the end of year will be correct. That is, the "error" will negate (turn around) itself by the end of the second year.

IX. Chapter Supplement A: LIFO Liquidations

1. Financial Statement Effects of LIFO Liquidations
 - a. A LIFO layer is a group of items purchased at the same price. When companies acquire goods for resale at various prices, they have different "layers" for inventory costing.
 - b. A LIFO liquidation is a sale of an inventory item from beginning LIFO inventory. That is, the company sells more goods than were purchased in the current year. For companies facing rising inventory costs, the items in beginning inventory have lower costs than current purchases.
 - c. Determination of LIFO liquidations is at the end of the period, NOT at an earlier point. Therefore, a company may make additional purchases at year-end to avoid "temporary liquidations". That is, the company can avoid selling more units than were purchased during the period by careful year-end planning.
2. LIFO Liquidations and Financial Statement Analysis
 - a. If LIFO liquidation is experienced, NI is increased since older costs are matched with current sales amounts (like FIFO).
 - b. Note disclosure is usually required for LIFO liquidations.

X. Chapter Supplement B: Additional Issues In Measuring Purchases

1. Purchase Returns and Allowances
 - a. The return of merchandise to the supplier is addressed.
 - b. Perpetual inventory system: credit the inventory account.
 - c. Periodic inventory system: credit the purchases return and allowances account
 - d. Cost of goods sold is reduced by the amount of the return or allowance under both systems.
2. Purchase Discounts
 - a. When merchandise is bought on credit, terms such as 2/10,n/30 are sometimes specified.
 - b. If the purchase is paid within the discount period, the discount is granted.
 - c. Perpetual inventory system – the Inventory account is credited (reduced)
 - d. Periodic inventory system – the Purchase Discount account is credited (increase of a contra account)

XI. Chapter Supplement C: Comparison of Periodic and Perpetual Inventory Systems

- 1. Perpetual Inventory**
 - a.** Inventory is updated continually (perpetually).
 - b.** Computers are typically required.
 - c.** Inventory counts need not coincide with the company's year-end. However, a physical count should be done at least once a year to validate or adjust the inventory account balance.
 - d.** There is up-to-date inventory information available during the period.
 - e.** Stock outs and overstocks are less apt to occur.
 - f.** Interim financial statements are less costly to prepare since up-to-date information exists for Cost of Goods Sold and ending Inventory.
 - g.** The use of this system is often essential for a company's survival.
- 2. Periodic Inventory**
 - a.** Inventory is updated once in a while (periodically).
 - b.** Computers need not be used.
 - c.** It is costly and time consuming to take physical inventory counts at year-end.
 - d.** There is a lack of up-to-date inventory information available during the period.
 - e.** Stock outs and overstocks may occur.
 - f.** Interim financial statements are more costly to prepare. Methods for estimating ending Inventory may be employed.
 - g.** The use of this system is usually only appropriate for small companies.
- 3. Perpetual Inventory Records in Practice**
 - a.** Inventory systems should meet the needs of management.
 - b.** Management needs up-to-date "unit" information in order to minimize or avoid stock outs and overstocks. Also, the ability to track defective or unsatisfactory goods enhances quality control.