



PRINCIPLES OF ACCOUNTING

CHAPTER 7-INVENTORIES

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Chapter Introduction

Inventory is a major asset for many businesses

- Retailers
- Wholesalers
- Manufacturers
- Pharmacies
- Supermarkets
- Hardware stores
- Fuel and spare-parts dealers

The amount assigned to inventory directly affects

- Cost of merchandise sold
- Gross profit
- Net income
- Current assets
- Total assets
- Owner's equity

Opening Case — Managing Retail Inventory

A large retailer may carry thousands of different products.

Management must know

- What products are available
- Where each item is located
- How much each item cost
- How many units were sold
- Which items are damaged or obsolete
- Whether inventory records agree with physical quantities
- Whether products are selling quickly enough

Why Inventory Accounting Matters

Inventory errors may lead to incorrect

- Product costs
- Selling prices
- Gross profit
- Purchasing decisions
- Financial statements
- Loan decisions
- Tax calculations
- Management-performance assessments

Key Message

Inventory measurement affects both the Income Statement and the Balance Sheet.

Learning Objectives

By the end of this chapter, students will be able to:

1. Explain the importance of inventory control.
2. Identify inventory ownership at the reporting date.
3. Describe inventory cost-flow assumptions.
4. Calculate inventory using FIFO, LIFO and average cost.
5. Apply the methods under perpetual and periodic systems.
6. Compare the financial effects of the costing methods.
7. Apply lower-of-cost-or-market and net realizable value.
8. Explain inventory errors and their financial-statement effects.
9. Calculate inventory turnover and days' sales in inventory.
10. Estimate inventory using the retail and gross-profit methods.

Chapter Roadmap

1. Control of inventory
2. Physical inventory
3. Inventory ownership
4. Cost-flow assumptions
5. Perpetual inventory costing
6. Periodic inventory costing
7. Comparing costing methods
8. Inventory valuation
9. Inventory errors
10. Financial analysis
11. Inventory estimation
12. Comprehensive exercise

Connection with Chapter 6

Chapter 6

Explained how merchandising businesses:

- Purchase inventory
- Sell merchandise
- Record cost of merchandise sold
- Record inventory shrinkage

Chapter 7

Explains how the cost of inventory and the cost of merchandise sold are determined when unit costs change.

Opening Reflection

A retailer purchases identical products at different prices:

- 100 units at ETB 10
- 100 units at ETB 12
- 100 units at ETB 14

The retailer sells 200 units.

Questions

- Which units are assumed to have been sold?
- What is the cost of merchandise sold?
- What cost remains in ending inventory?
- Will different assumptions produce different profits?

Section 1

Control of Inventory

Safeguarding merchandise and reporting it correctly



What Is Inventory?

For a merchandising business, inventory consists of goods:

- Owned by the business
- Held for resale
- Available for sale
- Not yet sold to customers

Classification

Current Asset

Two Objectives of Inventory Control

Inventory control has two major objectives.

1. Safeguard inventory — protect it from

- Theft
- Damage
- Loss
- Spoilage
- Unauthorized use

2. Report inventory correctly

Determine accurate quantities and costs for the financial statements.

Inventory Risks

Inventory may be lost through

- Customer shoplifting
- Employee theft
- Damage during transportation
- Poor storage
- Fire or water damage
- Expiration
- Obsolescence
- Recording errors
- Unauthorized withdrawals

Purchase Authorization

Inventory purchases should begin with an approved purchase order.

A purchase order normally identifies

- Supplier
- Product
- Quantity
- Agreed price
- Delivery terms
- Payment terms
- Authorized purchaser

Receiving Report

When inventory arrives, employees should prepare a receiving report.

It records

- Date received
- Supplier
- Product description
- Quantity received
- Condition of goods
- Damaged or missing items
- Name of receiving employee

Supplier Invoice

The supplier invoice provides evidence of

- Items purchased
- Quantities
- Unit prices
- Total amount
- Freight charges
- Credit terms
- Amount owed

Three-Way Matching

Before recording and paying for inventory, the business should compare:

1. Purchase order
2. Receiving report
3. Supplier invoice

Verification

- Was the purchase authorized?
- Was the merchandise received?
- Is the supplier's price correct?
- Does the quantity agree?
- Is payment properly supported?

Perpetual Inventory as a Control

A perpetual inventory system continuously records

- Units purchased
- Units sold
- Unit costs
- Cost of merchandise sold
- Quantity on hand
- Cost of ending inventory

It provides an expected inventory balance at any time.

Physical Inventory Count

Even when a perpetual system is used, businesses should periodically count inventory physically.

The physical count verifies

- Quantity actually on hand
- Condition of inventory
- Accuracy of accounting records
- Amount of inventory shrinkage

Physical-Count Procedures

Effective procedures include

- Counting during low-activity periods
- Stopping inventory movements
- Using numbered count sheets or tags
- Assigning independent counting teams
- Separating counters from inventory custodians
- Recounting unusual quantities
- Documenting damaged goods
- Reconciling counts with records

Inventory Shrinkage

Item	Amount
Inventory records	ETB 450,000
Physical inventory count	ETB 438,000
Inventory shrinkage (450,000 – 438,000)	ETB 12,000

Adjusting Entry

Account	Debit	Credit
Cost of Merchandise Sold	12,000	
Merchandise Inventory		12,000

Inventory Ownership

The physical location of merchandise does not always determine ownership.

Ownership may depend on

- Shipping terms
- Consignment agreements
- Purchase contracts
- Whether title has legally passed
- Whether the business bears the risks and benefits of ownership

Goods in Transit

Goods in transit are merchandise being transported between seller and buyer.

The inventory should be reported by the party that owns the goods at the reporting date.

Ownership depends primarily on the freight terms.

FOB Shipping Point

Under FOB shipping point

- Ownership passes when the seller delivers the goods to the carrier.
- The buyer normally owns goods in transit.
- The buyer includes them in ending inventory.
- The buyer normally pays freight.

FOB Destination

Under FOB destination

- Ownership passes when goods arrive at the buyer's location.
- The seller owns goods in transit.
- The seller includes them in ending inventory.
- The seller normally pays freight.

Consigned Inventory

Under a consignment arrangement:

Consignor

The owner who transfers goods to another party for sale.

Consignee

The party that holds and sells the goods for the owner.

Accounting Treatment

Unsold consigned goods remain inventory of the consignor.

Inventory-Control Knowledge Check

Determine who should include the inventory:

Situation	Owner
Goods shipped FOB shipping point before year-end	Buyer
Goods shipped FOB destination but not yet received	Seller
Goods held on consignment for another company	Consignor
Goods owned and stored in the company warehouse	Company
Goods sold and delivered before year-end	Customer

Section 2

Inventory Costs and Cost-Flow Assumptions

How costs enter inventory and how they are assigned



Cost of Inventory

Inventory cost generally includes the expenditures necessary to

- Purchase the merchandise
- Bring it to the business
- Place it in saleable condition

Examples

- Invoice price
- Freight paid by the buyer
- Import-related costs
- Handling costs directly associated with acquisition

Purchase returns and purchase discounts reduce inventory cost.

Goods Available for Sale

$$\text{Cost of Goods Available for Sale} = \text{Beginning Inventory} + \text{Net Cost of Purchases}$$

The cost of goods available must be divided between:

- Cost of merchandise sold
- Ending merchandise inventory

Fundamental Inventory Relationship

$$\text{Goods Available for Sale} = \text{Cost of Merchandise Sold} + \text{Ending Inventory}$$

Therefore:

$$\text{Cost of Merchandise Sold} = \text{Goods Available for Sale} - \text{Ending Inventory}$$

Why Cost-Flow Assumptions Are Needed

Identical merchandise may be purchased at different unit costs.

When units are sold, the accountant must determine

- Which costs are transferred to Cost of Merchandise Sold
- Which costs remain in Merchandise Inventory

Cost-flow assumptions provide a systematic method for assigning those costs.

Cost Flow versus Physical Flow

A cost-flow assumption does not always have to follow the physical movement of goods.

Example

A fuel retailer may physically mix deliveries purchased at different prices. The accounting system still assigns costs using a selected cost-flow method.

Specific Identification

Specific identification assigns the actual cost of each identifiable item.

It is appropriate when inventory consists of

- Motor vehicles
- Unique jewellery
- Artwork
- Specialized machinery
- High-value equipment
- Individually traceable products

First-In, First-Out (FIFO)

Under FIFO

- The earliest costs are assigned to units sold.
- The most recent costs remain in ending inventory.

FIFO Meaning

First Costs In → First Costs Out

Last-In, First-Out (LIFO)

Under LIFO

- The most recent costs are assigned to units sold.
- The earliest costs remain in ending inventory.

LIFO Meaning

Last Costs In → First Costs Out

Average Cost

The average-cost method assigns an average unit cost to:

- Units sold
- Units remaining in inventory

It reduces the effects of individual price fluctuations.

Common Inventory Dataset

The following information will be used throughout the chapter:

Date	Transaction	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	ETB 10	ETB 1,000
Jan. 5	Purchase	100	12	1,200
Jan. 10	Sale	120		
Jan. 15	Purchase	100	14	1,400
Jan. 20	Sale	80		

Units Available and Sold

Units Available: $100 + 100 + 100 = 300$ units

Units Sold: $120 + 80 = 200$ units

Ending Inventory: $300 - 200 = 100$ units

Cost of Goods Available

$$\begin{aligned} & (100 \times 10) + (100 \times 12) + (100 \times 14) \\ & = 1,000 + 1,200 + 1,400 = \text{ETB } 3,600 \end{aligned}$$

This amount must be divided between Cost of Merchandise Sold and Ending Inventory.

Section 3

Perpetual Inventory Costing

Applying FIFO, LIFO and moving average at each sale



Perpetual Costing

Under a perpetual system

- Inventory records are updated after every purchase.
- Cost of merchandise sold is calculated after every sale.
- Remaining inventory quantities and costs are continuously available.

Each inventory layer is updated after every purchase and every sale.

Perpetual Inventory Record

A perpetual inventory record normally includes:

Purchases	Cost of Merchandise Sold	Inventory Balance
Units	Units	Units
Unit cost	Unit cost	Unit cost
Total cost	Total cost	Total cost

Perpetual FIFO Rule

At each sale

1. Identify the oldest inventory layer.
2. Assign the oldest costs to the units sold.
3. Continue to the next layer when required.
4. Leave the newest costs in inventory.

FIFO before the First Sale

Before the January 10 sale:

Inventory Layer	Units	Unit Cost	Total
Beginning inventory	100	ETB 10	ETB 1,000
January 5 purchase	100	12	1,200
Total	200		2,200

FIFO — First Sale

On January 10, 120 units are sold. FIFO assigns:

- 100 units at ETB 10
- 20 units at ETB 12

$$(100 \times 10) + (20 \times 12) = 1,000 + 240 = \text{ETB } 1,240$$

FIFO after the First Sale

The January 5 layer originally contained 100 units. After selling 20 units from that layer:

$$100 - 20 = 80 \text{ units}$$

Remaining inventory

Units	Unit Cost	Total
80	ETB 12	ETB 960

FIFO — January 15 Purchase

Purchase: 100 units at ETB 14.

Inventory after the purchase

Layer	Units	Unit Cost	Total
Remaining January 5 inventory	80	ETB 12	ETB 960
January 15 purchase	100	14	1,400
Total	180		2,360

FIFO — Second Sale

On January 20, 80 units are sold. FIFO assigns the oldest remaining units:

$$80 \times 12 = \text{ETB } 960$$

Perpetual FIFO Ending Inventory

After the second sale, the remaining inventory is 100 units at ETB 14.

$$100 \times 14 = \text{ETB } 1,400$$

Perpetual FIFO Summary

Item	Amount
Cost of first sale	ETB 1,240
Cost of second sale	960
Cost of Merchandise Sold	2,200
Ending Inventory	1,400
Total Goods Available	3,600

FIFO Sale Entry

Assume the 120 units are sold for ETB 20 each.

$$\text{Sales Revenue: } 120 \times 20 = \text{ETB } 2,400$$

Account	Debit	Credit
Cash or Accounts Receivable	2,400	
Sales		2,400
Cost of Merchandise Sold	1,240	
Merchandise Inventory		1,240

Perpetual LIFO Rule

At each sale

1. Identify the most recent inventory layer.
2. Assign the newest costs to units sold.
3. Continue to older layers when required.
4. Leave the oldest costs in inventory.

LIFO before the First Sale

Inventory available before January 10:

Layer	Units	Unit Cost	Total
Beginning inventory	100	ETB 10	ETB 1,000
January 5 purchase	100	12	1,200
Total	200		2,200

LIFO — First Sale

On January 10, 120 units are sold. LIFO assigns:

- 100 units at ETB 12
- 20 units at ETB 10

$$(100 \times 12) + (20 \times 10) = 1,200 + 200 = \text{ETB } 1,400$$

LIFO after the First Sale

Beginning inventory originally contained 100 units. After 20 units are assigned to the sale:

$$100 - 20 = 80 \text{ units}$$

Remaining inventory

Units	Unit Cost	Total
80	ETB 10	ETB 800

LIFO — January 15 Purchase

Inventory after purchasing 100 units at ETB 14:

Layer	Units	Unit Cost	Total
Older layer	80	ETB 10	ETB 800
January 15 purchase	100	14	1,400
Total	180		2,200

LIFO — Second Sale

On January 20, 80 units are sold. LIFO assigns the newest units:

$$80 \times 14 = \text{ETB } 1,120$$

Perpetual LIFO Ending Inventory

After the second sale:

Older layer: $80 \times 10 = \text{ETB } 800$

Remaining new layer: $20 \times 14 = \text{ETB } 280$

Ending Inventory: $800 + 280 = \text{ETB } 1,080$

Perpetual LIFO Summary

Item	Amount
Cost of first sale	ETB 1,400
Cost of second sale	1,120
Cost of Merchandise Sold	2,520
Ending Inventory	1,080
Total Goods Available	3,600

LIFO Sale Entry

For the first sale:

Account	Debit	Credit
Cash or Accounts Receivable	2,400	
Sales		2,400
Cost of Merchandise Sold	1,400	
Merchandise Inventory		1,400

Only the cost entry differs from FIFO.

Moving-Average Method

Under perpetual average cost

- A new average unit cost is calculated after every purchase.
- The current average is applied to units sold.
- The method is often called the moving-average method.

Average after January 5 Purchase

Total units: $100 + 100 = 200$

Total cost: $1,000 + 1,200 = \text{ETB } 2,200$

Average unit cost: $2,200 \div 200 = \text{ETB } 11$

Average Cost — First Sale

- Units sold: 120
- Current average cost: ETB 11

Cost of first sale: $120 \times 11 = \text{ETB } 1,320$

Balance after the First Sale

Remaining units: $200 - 120 = 80$

Remaining cost: $2,200 - 1,320 = \text{ETB } 880$

New Average after January 15 Purchase

- Existing inventory: 80 units costing ETB 880
- New purchase: 100 units costing ETB 1,400
- Total: 180 units costing ETB 2,280

$$\text{New average: } 2,280 \div 180 = \text{ETB } 12.6667$$

Average Cost — Second Sale

- Units sold: 80
- Cost per unit: ETB 12.6667

Cost of second sale: $80 \times 12.6667 \approx \text{ETB } 1,013.33$

Perpetual Average Ending Inventory

Remaining units: $180 - 80 = 100$

Ending inventory: $100 \times 12.6667 \approx \text{ETB } 1,266.67$

Perpetual Average Summary

Item	Amount
Cost of first sale	ETB 1,320.00
Cost of second sale	1,013.33
Cost of Merchandise Sold	2,333.33
Ending Inventory	1,266.67
Total Goods Available	3,600.00

Perpetual Method Comparison

Method	Cost of Merchandise Sold	Ending Inventory
FIFO	ETB 2,200.00	ETB 1,400.00
LIFO	2,520.00	1,080.00
Moving average	2,333.33	1,266.67

Observation

When prices rise, the three methods produce different costs and profits.

Computerized Perpetual Systems

Computerized inventory systems may automatically update

- Quantities purchased
- Quantities sold
- Unit costs
- Inventory layers
- Average unit costs
- Cost of merchandise sold
- Ending inventory
- Reorder reports

Section 4

Periodic Inventory Costing

Assigning costs at the end of the period



Periodic Inventory System

Under a periodic system

- Purchases are accumulated during the period.
- Inventory is not reduced at each sale.
- Cost of merchandise sold is not recorded at every sale.
- Ending inventory is determined through physical count.
- Cost of merchandise sold is calculated at period-end.

Periodic Cost Formula

$$\begin{aligned} \text{Cost of Merchandise Sold} = \\ & \text{Beginning Inventory} \\ & + \text{Net Purchases} \\ & - \text{Ending Inventory} \end{aligned}$$

Periodic Dataset

Inventory Layer	Units	Unit Cost	Total
Beginning inventory	100	ETB 10	ETB 1,000
January 5 purchase	100	12	1,200
January 15 purchase	100	14	1,400
Available	300		3,600

Physical count

100 units remain.

Periodic FIFO Approach

FIFO assumes the oldest costs are assigned to the 200 units sold.

Therefore, the latest costs remain in ending inventory.

Periodic FIFO Ending Inventory

Ending inventory consists of 100 units at ETB 14.

$$100 \times 14 = \text{ETB } 1,400$$

Periodic FIFO Cost of Merchandise Sold

$$\text{Cost of Merchandise Sold} = 3,600 - 1,400 = \text{ETB } 2,200$$

FIFO — Perpetual versus Periodic

System	Cost of Merchandise Sold	Ending Inventory
Perpetual FIFO	ETB 2,200	ETB 1,400
Periodic FIFO	2,200	1,400

FIFO generally produces the same ending inventory under perpetual and periodic systems.

Periodic LIFO Approach

Periodic LIFO assumes the latest costs from the entire period are assigned to units sold.

The oldest costs remain in ending inventory.

Periodic LIFO Ending Inventory

Ending inventory consists of 100 units from beginning inventory at ETB 10.

$$100 \times 10 = \text{ETB } 1,000$$

Periodic LIFO Cost of Merchandise Sold

$$3,600 - 1,000 = \text{ETB } 2,600$$

LIFO — Perpetual versus Periodic

System	Cost of Merchandise Sold	Ending Inventory
Perpetual LIFO	ETB 2,520	ETB 1,080
Periodic LIFO	2,600	1,000

Reason for the Difference

Periodic LIFO applies the latest costs available for the entire period, while perpetual LIFO applies the latest costs available on each sale date.

Periodic Weighted-Average Cost

Under the periodic system, one weighted-average unit cost is calculated at period-end.

$$\text{Weighted-Average Unit Cost} = \text{Cost of Goods Available} \div \text{Units Available}$$

Periodic Average Unit Cost

$$\text{ETB } 3,600 \div 300 \text{ units} = \text{ETB } 12 \text{ per unit}$$

Periodic Average Ending Inventory

$$100 \text{ units} \times \text{ETB } 12 = \text{ETB } 1,200$$

Periodic Average Cost of Merchandise Sold

$$200 \text{ units} \times \text{ETB } 12 = \text{ETB } 2,400$$

Alternative calculation:

$$3,600 - 1,200 = \text{ETB } 2,400$$

Average Cost — Perpetual versus Periodic

System	Cost of Merchandise Sold	Ending Inventory
Moving average — perpetual	ETB 2,333.33	ETB 1,266.67
Weighted average — periodic	2,400.00	1,200.00

The results differ because the perpetual system recalculates average cost after each purchase.

Periodic Method Comparison

Method	Cost of Merchandise Sold	Ending Inventory
FIFO	ETB 2,200	ETB 1,400
LIFO	2,600	1,000
Weighted average	2,400	1,200

Periodic-System Knowledge Check

- Goods available: ETB 3,600
- FIFO ending inventory: ETB 1,400

Required

Calculate FIFO cost of merchandise sold.

Answer

$$3,600 - 1,400 = \text{ETB } 2,200$$

Section 5

Comparing Inventory Methods

Financial effects of FIFO, LIFO and average cost



Comparison under Rising Prices

When unit costs are increasing:

Measure	FIFO	Average	LIFO
Cost of merchandise sold	Lowest	Middle	Highest
Ending inventory	Highest	Middle	Lowest
Gross profit	Highest	Middle	Lowest
Net income	Highest	Middle	Lowest

Comparison under Falling Prices

When unit costs are decreasing:

Measure	FIFO	Average	LIFO
Cost of merchandise sold	Highest	Middle	Lowest
Ending inventory	Lowest	Middle	Highest
Gross profit	Lowest	Middle	Highest
Net income	Lowest	Middle	Highest

Gross-Profit Comparison

Sales revenue: 200 units × ETB 20 = ETB 4,000

Perpetual Results

Method	Sales	Cost of Merchandise Sold	Gross Profit
FIFO	4,000	2,200.00	1,800.00
LIFO	4,000	2,520.00	1,480.00
Moving average	4,000	2,333.33	1,666.67

Income-Statement Perspective

A method producing a higher cost of merchandise sold will produce

- Lower gross profit
- Lower income from operations
- Lower net income

A method producing a lower cost of merchandise sold will produce the opposite effect.

Balance-Sheet Perspective

A method producing higher ending inventory will report

- Higher current assets
- Higher total assets
- Higher owner's equity

A method producing lower ending inventory will report the opposite effect.

FIFO Reporting Perspective

During rising prices, FIFO

- Assigns older costs to merchandise sold
- Assigns recent costs to ending inventory
- Reports an inventory balance closer to recent purchase costs
- Reports higher gross profit than LIFO

LIFO Reporting Perspective

During rising prices, LIFO

- Assigns recent costs to merchandise sold
- Matches recent acquisition costs with current revenue
- Leaves older costs in ending inventory
- Reports lower gross profit than FIFO

Average-Cost Perspective

Average cost

- Reduces the effect of extreme unit prices
- Produces results between FIFO and LIFO during consistent price movements
- Is useful when units are similar
- Avoids maintaining many separate cost layers

Consistency Principle

Once an inventory method is selected, the business should apply it consistently.

Consistency improves

- Comparability between periods
- Interpretation of trends
- Reliability of financial analysis

A method change should not be made merely to manipulate reported profit.

Ethical Issue — Inventory Method Selection

Management may be tempted to choose a method based only on its effect on

- Profit
- Bonuses
- Loan conditions
- Taxes
- Shareholder expectations

Ethical Requirement

The method should provide appropriate and consistently applied financial information.

Section 6

Reporting Inventory in the Financial Statements

Cost, market, net realizable value and disclosure



Inventory Is Normally Reported at Cost

Cost is the primary basis for reporting merchandise inventory.

However, inventory may lose value because of

- Declining replacement prices
- Damage
- Deterioration
- Obsolescence
- Changes in fashion
- Reduced customer demand
- Technological change

Lower-of-Cost-or-Market Method

Under the lower-of-cost-or-market method, inventory is reported at the lower of:

- Recorded cost
- Current market amount

The purpose is to avoid reporting inventory above the amount recoverable from its sale.

Lower-of-Cost-or-Market Example

Product	Cost	Market	Reported Amount
Product A	ETB 40,000	ETB 46,000	ETB 40,000
Product B	35,000	28,000	28,000
Product C	25,000	23,000	23,000
Total	100,000	97,000	91,000

Using the item-by-item approach, each product is reported at its individual lower amount.

Applying Lower of Cost or Market

The comparison may be applied to:

1. Each individual inventory item
2. Each major inventory category
3. Inventory as a whole

Different application levels may produce different inventory amounts.

Net Realizable Value

$$\text{Net Realizable Value} = \text{Estimated Selling Price} - \text{Direct Costs of Disposal}$$

Direct disposal costs may include

- Special advertising
- Sales commissions
- Packaging
- Repair costs necessary for sale

Net Realizable Value Example

Damaged merchandise has

- Original cost: ETB 50,000
- Estimated selling price: ETB 38,000
- Estimated selling costs: ETB 5,000

Net Realizable Value: $38,000 - 5,000 = \text{ETB } 33,000$

The inventory should not be reported above ETB 33,000.

Inventory Write-Down Entry

- Recorded inventory cost: ETB 50,000
- Recoverable value: ETB 33,000

Write-down: 50,000 – 33,000 = ETB 17,000

Account	Debit	Credit
Cost of Merchandise Sold or Inventory Loss	17,000	
Merchandise Inventory		17,000

Balance-Sheet Presentation

Inventory is normally presented under Current Assets.

Current Assets	ETB
Cash	180,000
Accounts Receivable	220,000
Merchandise Inventory	350,000
Supplies	25,000
Prepaid Insurance	15,000
Total Current Assets	790,000

Inventory Disclosures

Financial-statement notes may disclose

- Inventory costing method
- Perpetual or periodic system
- Basis of valuation
- Lower-of-cost-or-market application
- Significant write-downs
- Major inventory classifications
- Changes in costing methods

Section 7

Inventory Errors

Effects on the income statement and balance sheet



Causes of Inventory Errors

Inventory errors may result from

- Incorrect physical count
- Goods counted twice
- Goods omitted from the count
- Incorrect unit costs
- Ownership errors
- Goods in transit treated incorrectly
- Consigned goods included incorrectly
- Damaged goods valued improperly
- Cut-off errors

Ending Inventory and Cost of Merchandise Sold

$$\text{Cost of Merchandise Sold} = \text{Beginning Inventory} + \text{Purchases} - \text{Ending Inventory}$$

Therefore

- Understated ending inventory causes overstated cost of merchandise sold.
- Overstated ending inventory causes understated cost of merchandise sold.

Ending Inventory Understated

Assume ending inventory is understated by ETB 20,000.

Income Statement Effects

- Cost of merchandise sold: overstated ETB 20,000
- Gross profit: understated ETB 20,000
- Net income: understated ETB 20,000

Balance-Sheet Effects

- Inventory: understated
- Current assets: understated
- Total assets: understated
- Owner's equity: understated

Ending Inventory Overstated

Assume ending inventory is overstated by ETB 20,000.

Income Statement Effects

- Cost of merchandise sold: understated ETB 20,000
- Gross profit: overstated ETB 20,000
- Net income: overstated ETB 20,000

Balance-Sheet Effects

- Inventory: overstated
- Current assets: overstated
- Total assets: overstated
- Owner's equity: overstated

Two-Period Effect of an Inventory Error

An ending-inventory error becomes a beginning-inventory error in the following period.

Year 1 Ending Inventory Understated

- Year 1 net income is understated.
- Year 2 beginning inventory is understated.
- Year 2 cost of merchandise sold is understated.
- Year 2 net income is overstated.

Assuming the next ending inventory is correct, the error reverses over two periods.

Section 8

Financial Analysis and Inventory Estimation

Turnover, days' sales, retail and gross-profit methods



Inventory Turnover

Inventory turnover measures how often inventory is sold during a period.

$$\text{Inventory Turnover} = \text{Cost of Merchandise Sold} \div \text{Average Inventory}$$
$$\text{Average Inventory} = (\text{Beginning Inventory} + \text{Ending Inventory}) \div 2$$

Example

- Cost of merchandise sold: ETB 900,000
- Beginning inventory: ETB 180,000
- Ending inventory: ETB 220,000

$$\text{Average Inventory} = (180,000 + 220,000) \div 2 = \text{ETB } 200,000$$
$$\text{Inventory Turnover} = 900,000 \div 200,000 = 4.5 \text{ times}$$

Days' Sales in Inventory

$$\text{Days' Sales in Inventory} = 365 \div \text{Inventory Turnover}$$

$$365 \div 4.5 \approx 81.1 \text{ days}$$

Interpretation

The company holds approximately 81 days of inventory at the current sales rate.

Retail Inventory Method

The retail method estimates inventory using the relationship between cost and retail selling prices.

Item	Cost	Retail
Beginning inventory	ETB 80,000	ETB 120,000
Net purchases	320,000	480,000
Goods available	400,000	600,000

$$\text{Cost-to-retail ratio: } 400,000 \div 600,000 = 66.67\%$$

Retail Method — Estimating Ending Inventory

Net sales: ETB 450,000

**Ending inventory at retail: 600,000 – 450,000 = ETB
150,000**

**Estimated ending inventory at cost:
150,000 × 66.67% ≈ ETB 100,000**

Gross-Profit Method

The gross-profit method estimates inventory using an expected gross-profit rate.

Example

- Goods available at cost: ETB 450,000
- Net sales: ETB 500,000
- Expected gross-profit rate: 30%

Estimated gross profit: $500,000 \times 30\% = \text{ETB } 150,000$

Estimated cost of merchandise sold: $500,000 - 150,000 = \text{ETB } 350,000$

Estimated ending inventory: $450,000 - 350,000 = \text{ETB } 100,000$

Comprehensive Comparison

Using the chapter dataset:

Method	System	Cost of Merchandise Sold	Ending Inventory
FIFO	Perpetual	ETB 2,200.00	ETB 1,400.00
LIFO	Perpetual	2,520.00	1,080.00
Average	Perpetual	2,333.33	1,266.67
FIFO	Periodic	2,200.00	1,400.00
LIFO	Periodic	2,600.00	1,000.00
Average	Periodic	2,400.00	1,200.00

Chapter Summary

- Inventory is a major current asset of merchandising businesses.
- Inventory controls protect goods and support accurate reporting.
- Physical counts remain necessary under a perpetual system.
- Ownership depends on shipping and contractual terms.
- Goods available for sale are divided between cost of merchandise sold and ending inventory.
- FIFO assigns the earliest costs to units sold.
- LIFO assigns the most recent costs to units sold.
- Average cost assigns an average unit cost.

Chapter Summary (continued)

- Perpetual systems apply cost assumptions at each sale.
- Periodic systems apply cost assumptions at the end of the period.
- During rising prices, FIFO generally produces higher inventory and profit than LIFO.
- Inventory may require write-down when cost exceeds market or net realizable value.
- Inventory errors affect cost of merchandise sold, profit, assets and equity.
- Inventory turnover and days' sales measure inventory-management efficiency.
- The retail and gross-profit methods estimate ending inventory when a full count is unavailable.

Inventory Accounting Flow



Key Message

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Inventory accounting determines not only the amount reported as an asset, but also the cost charged against sales and the profit reported for the accounting period.

Closing Message

Effective inventory accounting combines physical control, accurate ownership determination, consistent cost assignment, prudent valuation and continuous performance analysis.



THANK YOU

Questions and Discussion

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