Chapter 11: Allocation of Joint Costs and Accounting for By-Product/Scrap
Learning Objectives

- How are the outputs of a joint process classified?
- What management decisions must be made before beginning a joint process?
- How is the joint cost of production allocated to joint products?
- How are by-product and scrap accounted for?
- How should retail and not-for-profit organizations account for the cost of a joint activity?
Joint Process

- **Joint process**—single process in which one product cannot be manufactured without producing others
  - Extractive industries, agriculture industries, food industries, chemical industries

- A joint process produces
  - **Joint products**—primary outputs of a joint process; substantial revenue-generating ability
  - **By-products**—incidental output of a joint process with a higher sales value than scrap but less than joint products
  - **Scrap**—incidental output of a joint process with a low sales value
  - **Waste**—residual output with no sales value
Joint Costs

- **Joint costs**—material, labor, and overhead incurred during a joint process
  - Allocate to primary products of a joint process using
    - Physical measures
    - Monetary measures
  - Interpret costs allocated to joint products carefully; product profitability is determined largely by the allocation method
Terms

- **Split-off point**—when joint products are first identifiable as individual products
  - At split-off, joint costs are allocated to joint products
- Joint costs are **sunk costs** once the split-off point is reached
- Joint costs may be reduced by the sales value of by-products and/or scrap
Management Decisions

To Process or Not to Process?

1. Will revenues exceed total costs?
   - Revenue from sale of joint process outputs
   - Costs
     - Joint costs
     - Processing costs after split-off
     - Selling costs

Decide before the joint process is started
To Process or Not to Process?

2. What is the opportunity cost?
   - Is income from the joint process greater than income from other uses?
   - Is the joint production process the best use of capacity?

Decide before the joint process is started
Management Decisions

To Process or Not to Process?

3. How to classify outputs?
   - Primary
   - By-product
   - Scrap
   - Waste

   Joint costs, reduced by the value of by-products and scrap, are assigned to primary products only

   Decide at the split-off point
To Process or Not to Process Further?

4. Sell at split-off or process further?

If primary products are marketable at split-off, process further only if value added to the product (incremental revenue) exceeds incremental cost.

Decide at the split-off point
Two Ways to Allocate Joint Costs

1. Physical measure
   - Common physical characteristic

2. Monetary measure

Each method may allocate a different cost to joint products
Allocating Joint Costs

- **Physical Measure**
  - Treats each unit as equally desirable
  - Assigns same cost to each unit
  - Provides an unchanging yardstick of output over time
  - Use for products with unstable selling prices
  - Use in rate-regulated industries
  - Ignores revenue-generating ability of joint product
Allocating Joint Costs

Monetary Measure Choices

- Sales value at split-off
- Net realizable value at split-off
- Approximated net realizable value at split-off
Monetary Measure Allocation Steps

- Choose a monetary allocation base
- List values that comprise the base for each joint product
- Sum the values
- Divide each individual value by the total value; this is the numerical proportion for each value
- Multiply joint costs by each proportion; this is the amount to allocate to each product
- Divide allocated joint cost for each product by the number of equivalent units to obtain a cost per equivalent unit
Accounting for By-Products and Scrap

- Sales value of by-products/scrap is recorded using
  - Net Realizable Value Method or
  - Realized Value Method
- Choose method based on
  - magnitude of net realizable value
  - need for additional processing after split-off
Joint costs include
- Advertising for multiple products
- Printing for multipurpose documents
- Events held for multiple purposes

Not required to allocate joint costs

Allocation base
- Physical (number of locations)
- Monetary (sales volume)
Joint Costs: Not-For-Profit Organizations

- Joint costs related to
  - fund-raising
  - organizational programs (program activities)
  - conducting an administrative function
- Joint costs **must** be allocated for NPFs and state and local government entities
- Method must be rational and systematic
- Clearly show the amount spent for various activities—especially fund-raising
Questions

- What is a joint product?
- How are costs allocated to joint products?
- What accounting methods are used to record the proceeds from the sale by-products?
Potential Ethical Issues

- Product decisions based on sum of joint and separate processing costs
- Misclassifying a joint product as by-product or scrap
- Misclassifying products as waste and selling “off the books”
- Manipulating joint costs in ending inventory
- Using sales values of by-products and scrap to manipulate overhead allocation rates
- Disposing of hazardous waste in a harmful way
- Misallocating costs to programs or management activities to reduce fund-raising costs reported by a not-for-profit organization