Topic 7. COST ALLOCATION II

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- 7.1. Common cost allocation
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Introduction

- How should the airline costs of a trip to attend job interviews from London to Dubai to Tunis and then return to London be allocated among the prospective employers in Dubai and Tunis?

- *Why do managers ask this questions? >>> To allocate costs.*

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7.1. Common cost allocation

Common cost

- A **common cost**
  - is a cost of operating a facility, operation activity or other cost object
  - that is shared by two or more users.

Example,

the cost of tickets for Paula from Galway

to visit possible employers in Moscow and Prague

with the round trip Galway-Moscow-Prague-Galway

Stand-alone cost-allocation method

- The **Stand-alone cost-allocation method**
  - uses information related to each cost object
  - as a separate operating entity
  - to determine the cost-allocation weights.

+ Fairness rationale

Incremental cost-allocation method

- The **Incremental cost-allocation method**
  - rank the individual cost objects
  - and then uses this ranking to allocate costs among those cost objects.

First ranked object - primary party

Second-ranked - incremental party (can be more than one, should be ranked)

- Primary party receives the highest allocation of common costs.

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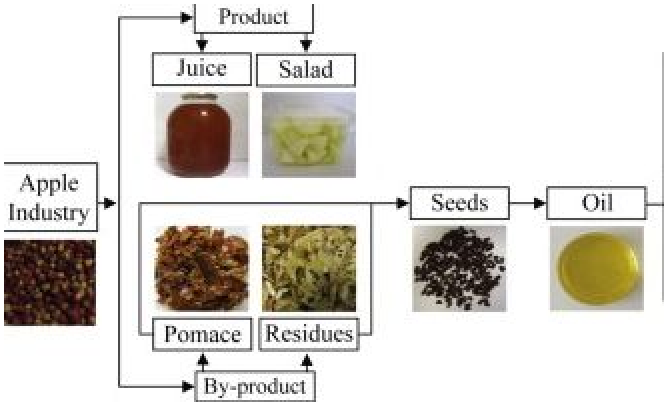
7.2 Joint-cost situations

Main product, by-product, scap

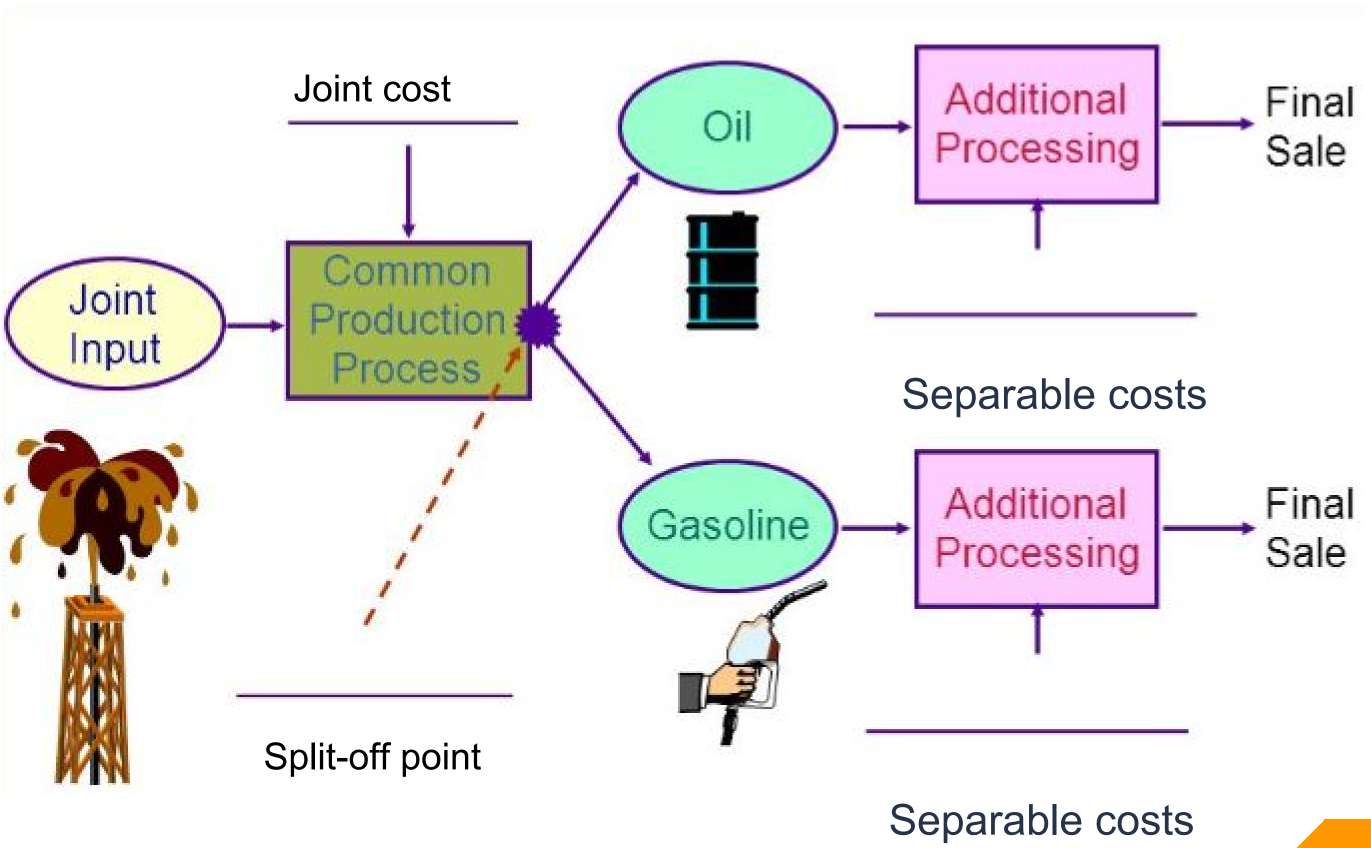
If a product yields only one product with a relatively high sales value, that product is termed a **main product**.

By-product has a low sales value to compare to main product.

Scap has a minimum sales value.



Joint-product



Joint-product

The term **joint product** is reserved for cases where the production process yields multiple high sales value products.

Split-off point is the moment when one product becomes other products. *(sale or further processing decisions)*

Joint cost - the cost of common production process.

Separable costs are costs incurred beyond the split-off point that are assigned to one or more individual products.

Why allocate joint costs?

- **Irrelevance** of joint costs **for decision making**
  - In a sell or process further decision,
  - the joint costs will be incurred
  - whether or not the product is processed further.

Why allocate joint costs?

- Stock cost and cost-of-goods-sold calculations for internal and external financial reporting.
- Customer profitability analysis
  - individual customers purchase varying combinations of joint products or by-products
- Rate regulation
  - One or more of the jointly produced products or services are subject to price regulation

Allocating joint costs

1. Based on market data (for example, revenues)
   a. The sales value at split-off method
   b. The estimated net realisable value (NRV) method
   c. The constant gross-margin percentage NRV method
2. Using physical units measure-based data such as weight of volume.

Sales value at split-off method

- The **Sales value at split-off method**
  - allocates joint costs on the basis
  - of the relative sales value at the split-off point
  - of the total production
  - in the accounting period of each product.

Sales value = total production * seling price

Costs are allocated to products in proportion to their ability to contribute revenues.

Physical measure method

- The **Physical measure method**
  - allocates joint costs on the basis
  - of their relative proportion at the split-of point,
  - using a common physical measure
  - such as weight or volume of the total production of each product.

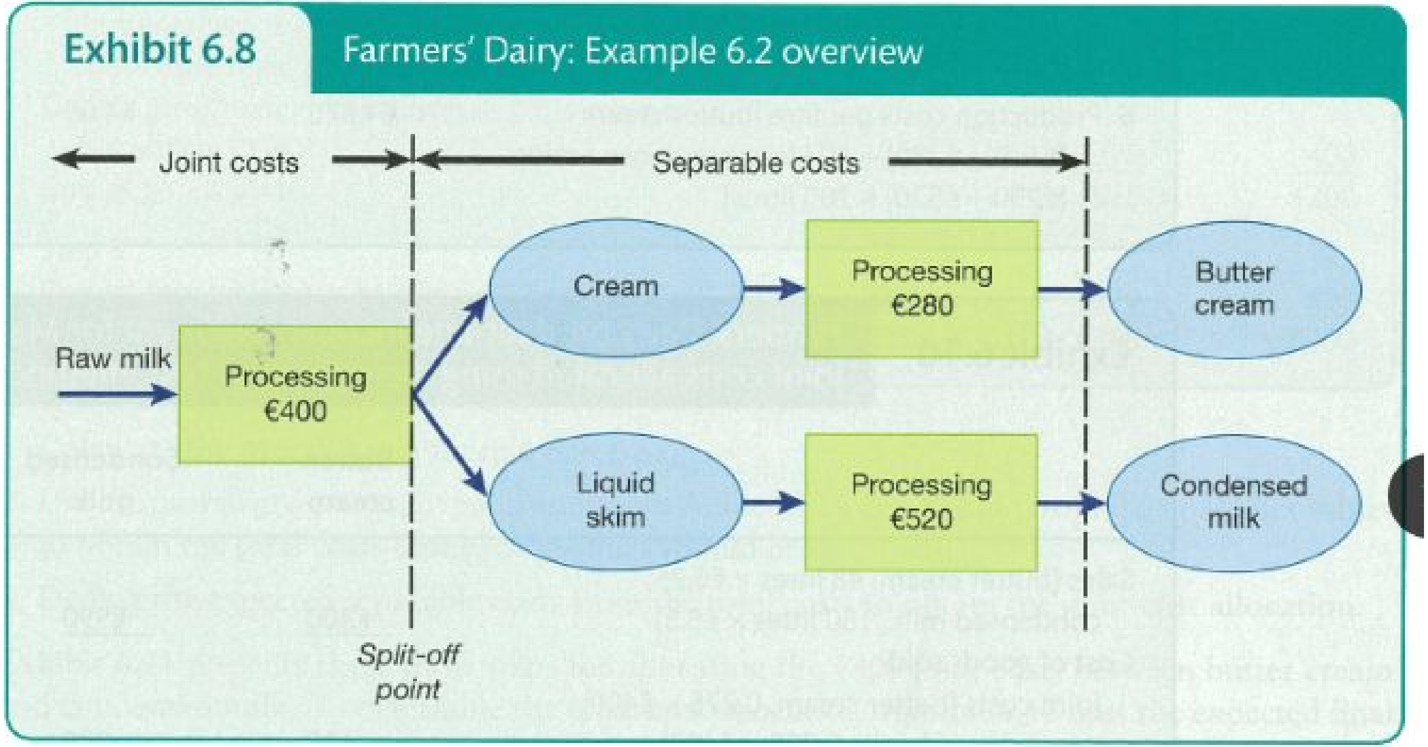
Obtaining the common physical measure is not always possible.

Exhibit 6.6 Allocation of joint costs using the physical measure method

	Cream	Liquid skim	Total
1 Physical measure of production (litres)	25	75	100
2 Weighting (100 litres ÷ 400 litres; 300 litres ÷ 400 litres)	0.25	0.75	
3 Joint costs allocated (cream, 0.25 × €400; liquid skim, 0.75 × €400)	€100	€300	€400
4 Joint production costs per litre (cream, €100 ÷ 100 litres; liquid skim, €300 ÷ 300 litres)	€1	€1	

Exhibit 6.7 Farmers' Dairy product-line income statement for May 2015: joint costs allocated using the physical measure method

	Cream	Liquid skim	Total
Sales (cream, 80 litres × €2; liquid skim, 120 litres × €1)	€160	€120	€280
Joint costs			
Production costs (cream, 0.25 × €400; liquid skim, 0.75 × €400)	100	300	400
Deduct closing stock (cream, 20 litres × €1; liquid skim, 180 litres × €1)	20	180	200
Cost of goods sold	80	120	200
Gross margin	€80	€0	€80
Gross-margin percentage	50%	0%	28.6%



If farmet decide to process further

Estimated net realisable value method

- The **Estimated net realisable value (NRV)** method
  - allocates joint costs on the basis
  - of the <u>*relative estimated net realisable value*</u> -
    - expected final sales value
    - in the ordinary course of business
    - minus expected separable costs of production and marketing of the total production of the period.

There may not be any market prices at the split-off point.

Exhibit 6.9 Allocation of joint costs using the estimated NRV method

	Butter cream	Condensed milk	Total
1 Expected final sales value of production (butter cream, 80 litres × €6.25; condensed milk, 200 litres × €5.5)	€500	€1100	€1600
2 Deduct expected separable costs to complete and sell	280	520	800
3 Estimated NRV at split-off point	€220	€580	€800
4 Weighting (€220 ÷ €800; €580 ÷ €800)	0.275	0.725	
5 Joint costs allocated (butter cream, 0.275 × €400; condensed milk, 0.725 × €400)	€110	€290	€400
6 Production costs per litre [butter cream (€110 + €280) ÷ 80 litres; condensed milk (€290 + €520) ÷ 200 litres]	€4.875	€4.05	

Exhibit 6.10 Farmers' Dairy product-line income statement for May 2015: joint costs allocated using the estimated NRV method

	Butter cream	Condensed milk	Total
Sales (butter cream, 48 litres × €6.25; condensed milk, 180 litres × €5.5)	€300	€990	€1290
Cost of goods sold			
Joint costs (butter cream, 0.275 × €400; condensed milk, 0.725 × €400)	110	290	400
Separable processing costs	280	520	800
Cost of goods available for sale	390	810	1200
Deduct closing stock (butter cream, 32 litres × €4.875; condensed milk, 20 litres × €4.05)	156	81	237
Cost of goods sold	234	729	963
Gross margin	€66	€261	€327
Gross-margin percentage	22.0%	26.4%	25.3%

Constant gross-margin percentage NRV method

- The **Constant gross-margin percentage NRV method**
  - allocates joint costs in such a way
  - that the overall gross-margin percentage
  - is identical for all the individual products.

Entails 3 steps.

1. *Calculate the overall gross margin percentage*
2. *Deduct gross margin from the final sales values to obtain cost that each product should bear*
3. *Deduct the expected separate costs*

Exhibit 6.11 Farmers' Dairy for May 2015: joint costs allocated using constant gross-margin percentage NRV method

	Butter cream	Condensed milk	Total
Step 1			
Expected final sales value of production:			
(80 litres × €6.25) + (200 litres × €5.5)		€1600	
Deduct joint and separable costs (€400 + €280 + €520)		1200	
Gross margin		€400	
Gross-margin percentage (€400 ÷ €1600)		25%	
Step 2			
Expected final sales value of production (butter cream, 80 litres × €6.25; condensed milk, 200 litres × €5.5)	€500	€1100	€1600
Deduct gross margin, using overall gross-margin percentage (25%)	125	275	400
Cost of goods sold	375	825	1200
Step 3			
Deduct separable costs to complete and sell	280	520	800
Joint costs allocated	€95	€305	€400

Bhimani A, Horngren CT, Datar SM and Rajan M. Management and Cost Accounting, 5/E. Financial Times Press 2012.

Chapter 5 and 6.