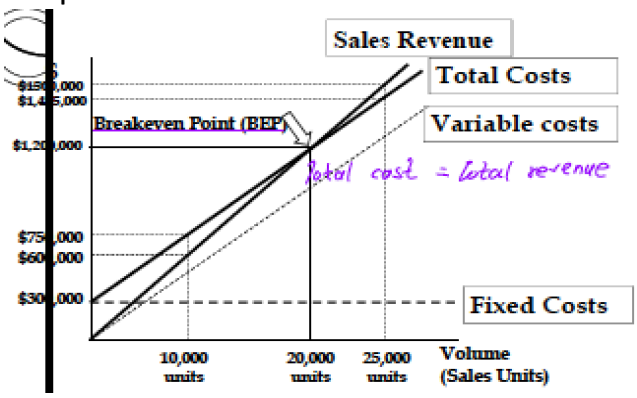
# Lecture 1

## 1. CVP analysis

- Graphical Method




- Equation Method

$$q = \frac{F + Profit}{(P - VC)}$$

- Contribution Margin Method

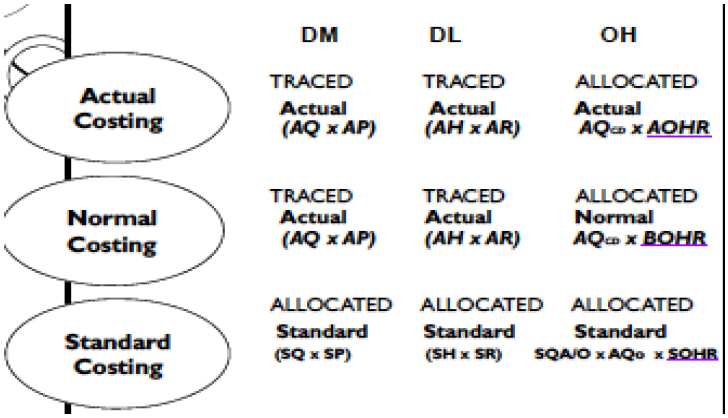
## 2. Absorption Costing

- Actual Costing System

$$Actual\ OH\ rate = \frac{Actual\ OH\ costs\ incurred\ during\ the\ period}{Actual\ qty\ of\ the\ allocation\ base}$$

- Normal Costing System

$$Budgeted\ OH\ rate = \frac{Estimated\ OH\ costs\ for\ the\ coming\ period}{Estimated\ qty\ of\ the\ allocation\ base}$$



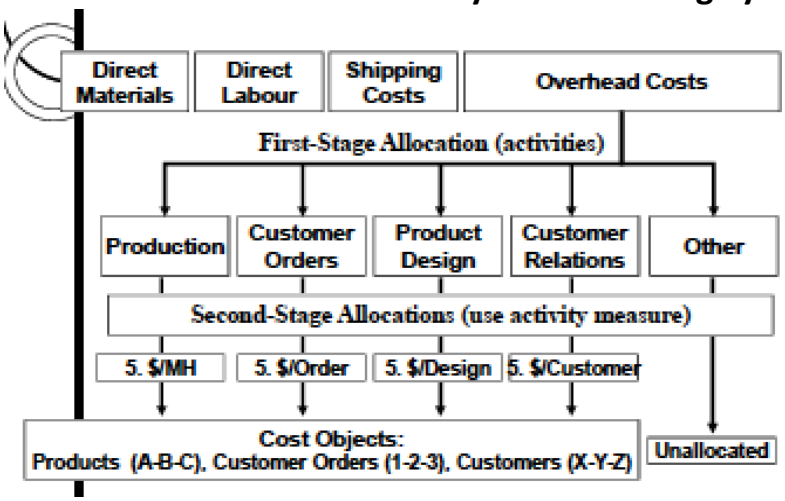

- End-of-period Adjustments
  - Write-off to COGS

| | | |
|---|---|---|
| OH allocated | X | |
| COGS | X | |
| OH control | | x |

  - Proration Approach
    a. Total amount of mfg. OH allocated

b. Ending balance

## 3. Plant-wide OH Rate vs. Activity-Based Costing Systems



## Lecture 2

Example:

- Beginning inventory: 0; Units produced: 10,000; Units sold: 8,000; Ending inventory: 2,000
- Actual and Budgeted Variable Manufacturing costs per unit are:
  - DM $4
  - DL $21
  - VOH $24
- Total budgeted and actual Fixed manufacturing costs are $52,000 at a normal capacity of 13,000 units
- Fixed non-manufacturing costs are $30,000 per year
- Variable non-manufacturing costs are $2.00 per unit
- Unit selling price = $71

### 1. Absorption Costing

- Unit Cost

| | |
|---|---|
| DM | $4 |
| DL | $21 |
| VOH | $24 |
| FOH | ($52,000/13,000)<br>$4 |
| Total | $53 |

- Variances (FOH)

| Actual | Allocated |
|---|---|
| Actual FOH | AQ*FOH rate |
| $52,000 | 10,000*$4 |
| PVV<br>$12,000U/under-allocated | |

- Income Statement

| | |
|---|---|
| Revenue (8,000*$71) | $568,000 |
| Less: Cost of goods sold (8,000*$53) | 424,000 |
| Under-allocated OH | 12,000U |
| Gross Margin | $132,000 |
| Less: Non-manufacturing costs ($30,000+$2*8,000) | 46,000 |
| Operating income | $86,000 |

## 2. Variable Costing

- Unit Cost

| | |
|---|---|
| DM | $4 |
| DL | $21 |
| VOH | $24 |
| FOH | - |
| Total | $49 |

- Income Statement

| | |
|---|---|
| Revenue (8,000*$71) | $568,000 |
| Less: Cost of goods sold (8,000*$49) | 392,000 |
| Variable non-manufacturing costs (8,000*$2) | 16,000 |
| Contribution Margin | $160,000 |
| Less: Fixed manufacturing costs | 52,000 |
| Fixed non-manufacturing costs | 30,000 |
| Operating income | $78,000 |

## 3. Reconciliation AC vs. VC

$$AC\ operating\ income - VC\ operating\ income = (EI - BI) * FOHR$$

## 4. Summary

| Year | Relation between production and sales | Effect on inventory | Relation between variable and absorption income |
|---|---|---|---|
| 1st Year | Production>Sales | Inventory increases | Absorption>Variable |
| 2nd Year | Production<Sales | Inventory decreases | Absorption<Variable |
| | Production=Sales | No change | Absorption=Variable |

## 5. Throughput Costing

- Unit Cost

| | |
|---|---|
| DM | $4 |
| DL | |
| VOH | |
| FOH | |
| Total | $4 |

- Income Statement

| | Year 1 | Year 2 | Combined |
|---|---|---|---|
| Revenues | $568,000 | $923,000 | $1,491,000 |
| Less: Cost of goods sold | 32,000[1] | 52,000 | 84,000 |
| Throughput contribution | $536,000 | $871,000 | $1,407,000 |
| Less: Other mfg. costs | 502,000[2] | 569,500 | 1,071,500 |
| Non-mfg. costs | 46,000 | 56,000 | 102,000 |
| Profit | $(12,000) | $245,500 | $233,500 |

[1] 8,000*$4

[2] ($21+$24)*10,000+$52,000

**6. Capacity concepts and analysis**

| | |
|---|---|
| Theoretical Capacity | Absolute maximum production capacity at full efficiency all the time |
| Practical Capacity | Maximum output that could be realized |