Al-Mustaqbal University
Department: Medical Instrumentation Techniques Engineering
Class: 4th
Subject: Project Management
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2nd term / Lecture: Financial Analysis – Cost Account methods

FINANCIAL ANALYSIS
Cost Account Methods

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Cost Account Methods:

Second method: Break Even Analysis Method (BEP): الطريقة الثانية: تحليل نقطة التعادل

1. Introduction:

The cost is classified by variability to:

1. **Variable Costs:** 1. التكاليف المتغيرة

- **Variable Costs: are costs which do vary directly with the level of output or production. Sometime are called direct costs.** هي التكاليف التي تتغير اعتمادا على مستوى المخرجات او الإنتاج وتسمى أحيانا بالتكاليف المباشرة
- **Costs that change in total, directly in proportion to changes in the level of activities (volume).**
- **The unit cost remains the same over a wide range of volume (referred to as the relevant range).**
- **Relevant Range is the range of activity (production volume) within which variable unit costs are constant and fixed costs are constant in total. In this range, the incremental cost of one additional unit of production is the same.**
- **Examples include direct materials, direct labor, and part of manufacturing overhead.**

من امثلة التكاليف المتغيرة: تكاليف المواد الخام واجور العمال وجزء من نفقات التصنيع

2. Fixed Costs: 2. التكاليف الثابتة

- Fixed Costs: are costs which do not vary directly with the level of output or production. Sometime are called indirect costs. هي التي لا تتغير مباشرة مع تغير مستوى المخرجات او الإنتاج وتسمى أحيانا بالتكاليف غير المباشرة
- Costs that do not change in total regardless of changes in activity.
- The unit cost decreases as volume increases.
- Examples include rent, taxes, and insurance on manufacturing plant.

من الأمثلة عليها: الإيجارات والضرائب والتامين على المصنع

3. Semi-variable (Mixed) Costs 3. التكاليف شبه المتغيرة (الخليط)

- Costs that contain both variable and fixed costs. هي التي تتضمن كلا النوعين من التكاليف المتغيرة والثابتة
- Examples include: light, heat, and power.

من الأمثلة عليها: الإضاءة والتدفئة والطاقة

Breakeven Point: It is the relationship between a variable cost, fixed cost and volume of production (sales). No profit or loss at the breakeven point.

نقطة التعادل هي العلاقة بين الكلفة المتغيرة والثابتة وحجم الإنتاج (المبيعات)، ليس هناك ربح او خسارة عند نقطة التعادل

Benefits of BEP:

1. Forecasting profit at any volume of sales.
2. Giving clear image about relationship between costs and sales per unit.
3. Help management to make decisions.

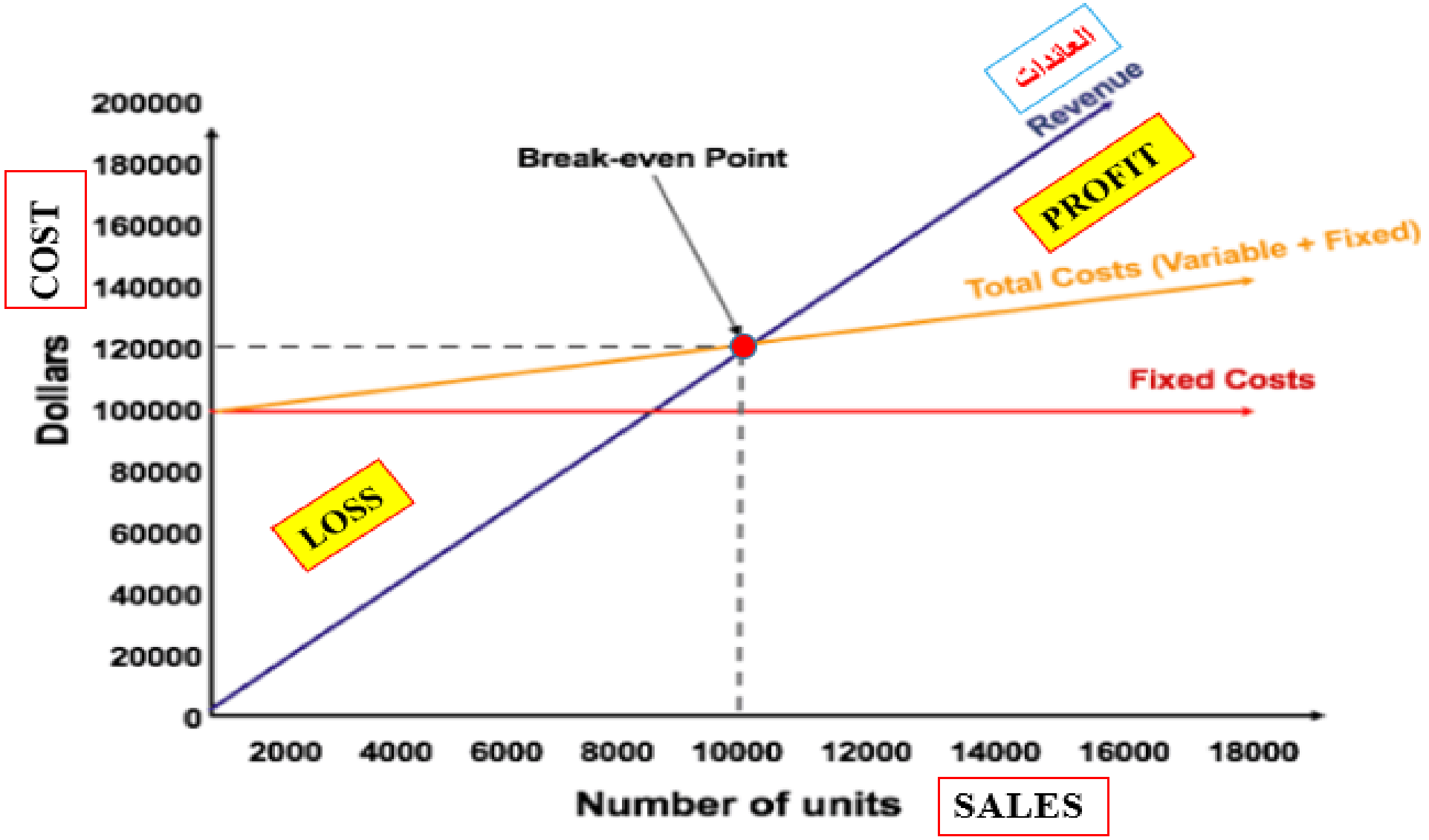
Breakeven Point (BEP) Methods:

1. Equation method: 1. طريقة المعادلة

- Sales = Total Fixed Costs + Total Variable Costs

- $$BEP = \frac{F}{1 - \frac{V}{S}}$$

Where F is a fixed cost, V is a variable cost and S is total sales.


العائدات
Revenue
PROFIT
Break-even Point
Total Costs (Variable + Fixed)
Fixed Costs
LOSS
COST
Dollars
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Number of units
SALES

Ex1:

For the following data:

Fixed cost = 100,000 ID

Variable cost per unit = 300 ID

Selling price per unit = 500 ID

1. **Find number of unit (Units of Production) to verify BEP.** جد عدد الوحدات الواجب بيعها لتحقيق نفطة التعادل
2. **Find BEP.** جد نقطة التعادل
3. **Find number of selling units to obtain an operating profit of 1,000,000 ID.**

   جد عدد الوحدات الواجب بيعها لتحقيق مليون دينار ربح
4. **Find the operating profit at production and selling 2,000 units.** جد الربح المتحقق عند انتاج وبيع الفين وحدة

Ans:

1. **Operating profit = Sales - Total Fixed Costs - Total Variable Costs**

   Operating profit = 0 at BEP

∴ Sales = Total Fixed Costs + Total Variable Costs

$$500\,U = 100,000 + 300\,U$$

$$500\,U - 300\,U = 100,000$$

$$200\,U = 100,000$$

$$\therefore U = \frac{100,000}{200} = 500\ Units$$

$$2. \quad BEP = \frac{F}{1-\frac{V}{S}} = \frac{100{,}000}{1-\frac{300}{500}} = 250{,}000\ ID$$

3. Operating profit = Sales - Total Fixed Costs - Total Variable Costs

$$1{,}000{,}000 = 500\ U - 100{,}000 - 300\ U$$

$$1{,}100{,}000 = 200\ U$$

$$U = 5500\ unit$$

4. Operating profit = Sales - Total Fixed Costs - Total Variable Costs

$$= 500\ U - 100{,}000 - 300U$$

$$= 200U - 100{,}000$$

$$= (200 \times 2000) - 100{,}000$$

$$= 300{,}000\ ID$$

Ex2: **For the following data:**

Fixed cost = 150,000 ID

Variable cost per unit = 450 ID

Selling price per unit=650 ID

1. **Find number of unit (Units of Production) to verify BEP.**
2. **Find BEP.**
3. **Find number of unit to obtain an operating profit of 3,000,000 ID.**
4. **Find the operating profit at production and selling 1,500 units.**

Ans:

1. **Operating profit = Sales - Total Fixed Costs - Total Variable Costs**

Operating profit = 0 at BEP

∴ Sales = Total Fixed Costs + Total Variable Costs

$$650\,U = 150,000 + 450\,U$$

$$650\,U - 450\,U = 150,000$$

$$200\,U = 150,000$$

$$\therefore U = \frac{150,000}{200} = 750\ Units$$

2. $$BEP = \frac{F}{1 - \frac{V}{S}} = \frac{150{,}000}{1 - \frac{450}{650}} = 487{,}500\ ID$$

3. **Operating profit = Sales - Total Fixed Costs - Total Variable Costs**

$$3{,}000{,}000 = 650\ U - 150{,}000 - 450\ U$$

$$3{,}150{,}000 = 200\ U$$

$$U = 15{,}750\ unit$$

4. **Operating profit = Sales - Total Fixed Costs - Total Variable Costs**

$$= 650\ U - 150{,}000 - 450U$$

$$= (200 \times 1500) - 150{,}000 = 150{,}000\ ID$$

H.W: **For the following data:**

Fixed cost = 120,000 ID

Variable cost per unit = 350 ID

Selling price per unit=550 ID

1. Find number of unit (Units of Production) to verify BEP.

2. Find BEP.

3. Find number of unit to obtain on operating profit of 2,000,000 ID.

4. Calculate the operating profit at production and selling 1,000 units.

2. Chart method: طريقة المخطط .2

Ex4: For the following data:

Fixed cost = 40,000 ID

Variable cost = 20,000 ID

Sales =100,000 ID

Calculate BEP by using chart method.

Ans: