**MBA 565 – Module 6 supplement**

**Breakeven Analysis**

Business is about numbers (e.g., stock price, profit, sales, market share), quantify your analysis whenever possible. Breakeven point (BEP or when profit equals zero) is one example.

Sale price = $10

Costs

- Variable = $7 (variable costs vary with units produced or sold, for example, raw materials, packaging, sales commissions)
- Fixed = $30,000 (fixed costs do not vary, within a range, with changes in units produced or sold, for example, rent, executive salaries)

Market size = $1,000,000 (all competitors)
Market share = 12%

Are we profitable?

Revenue: $120,000 = $1,000,000 * 0.12 (or 12% market share)

Unit sales (total sales/sales price): $120,000 / $10 = 12,000

Total variable cost (unit sales x variable cost per unit): $84,000 = 12,000 * $7

Total cost (variable + fixed): $114,000 = $84,000 + $30,000

Profit (revenue - total cost): $6,000 = $120,000 - $114,000

BEP (profit = $0)

Contribution margin = Price - variable cost = $3 = $10 - $7

BEP = (Fixed cost) / (contribution per unit) = $30,000/ $3 = 10,000 units (or $100,000)

**Marginal Analysis (from example above)**

If $30,000 in additional advertising increases market share to 20 percent (fixed costs = $60,000), is it worth it? To determine, you use marginal analysis (additional).

Revenue: $200,000 = $1,000,000 * .20

Marginal revenue = $80,000 = $200,000 - $120,000

Unit sales: $200,000 / $10 = 20,000

Marginal unit sales 8,000 = 20,000 - 12,000

Total variable cost: $140,000 = 20,000 * $7

Marginal variable cost $6,000 = $140,000 - $84,000

($84,000 = 12,000 units x $7 variable costs)

Total cost $200,000 = $140,000 + ($30,000 + $30,000)

Marginal cost = $86,000 = $200,000 - $114,000

Profit: $0

Marginal profit -$6,000 = $0 - $6,000

BEP (profit = $0)

Contribution margin (CM) = Price - variable cost = $3 = $10 - $7

Amount you have to contribute per unit sold to pay fixed costs and, hopefully, generate a profit.

BEP = (Fixed cost) / (contribution per unit) = $60,000/ $3 = 20,000 units (or $200,000)

**ANSWER: No**

Marginal (BEP) = $30,000 / $3 = 10,000 units (sales only increase by 8,000 with additional advertising expenditure)
**Cannibalization (new example)**

When one company's brand takes sales away from the company's other brand(s). This occurs when brands are too similar in price and benefit. (Brand A and B are owned by the same company.)

Sale price (brand A) = $10

Costs
- Variable = $4
- Fixed = $100,000

Revenue = $700,000 = 70,000 (units) * $10
Total variable cost: $280,000 = 70,000 * $4
Total cost: $380,000 = $280,000 + $100,000
  
  Profit (revenue - total costs): $320,000 = $700,000 - $380,000
  Profit = (Revenue * CM) - Fixed costs where CM = .6 = ($10 - $4) / $10
  Profit: $320,000 = ($700,000 * .6) - $100,000

New product (Brand B)
Sale price (Brand B) = $15

Costs
- Variable = $7
- Fixed = $400,000

Revenue = $1,500,000 = 100,000 (units) * $15
Total variable cost: $700,000 = 100,000 * $7
Total cost: $1,100,000 = $700,000 + $400,000 (fixed)
  
  Profit: $400,000 = $1,500,000 - $1,100,000
  Profit = (Revenue * CM) - Fixed costs where CM = .53 = ($15 - $7) / $15
  Profit: $400,000 = ($1,500,000 * .53333) - $400,000

**NO CANNIBALIZATION**

Profit (Brands A and B) = $720,000 = $320,000 + $400,000

**CANNIBALIZATION** = 30% (30% of Brand B's sales came from Brand A)

Brand B sales (cannibalized or taken from Brand A) = 30,000 = 100,000 * .3

Sale price (Brand A) = $10

Costs
- Variable = $4
- Fixed = $100,000

Revenue (Brand A) = $400,000 = (70,000 - 30,000) (units of Brand A sold) * $10
(Brand A sales before = 70,000)
Total variable cost: $160,000 = 40,000 * $4
Total cost: $260,000 = $160,000 + $100,000 (fixed)
  
  Profit (Brand A): $140,000 = $400,000 - $260,000
  Profit = (Revenue * CM) - Fixed costs where CM = .6 = ($10 - $4) / $10
  Profit: $140,000 = ($400,000 * .6) - $100,000

**CANNIBALIZATION**

Profit (Brands A and B) = $540,000 = $400,000 (Brand B) + $140,000 (Brand A)

Marginal Profit (Brands A and B) = $720,000 (no cannibalization) - $540,000 (cannibalization) = $180,000 lost

Should you introduce Brand B (assuming 30% cannibalization rate)?

Before brand B was introduced
- Profit (Brand A only) = $320,000
- Profit (Brand A and B with cannibalization) = $540,000
- Profit (marginal) = $220,000 (introduce B)