

LINKS Tutorial #6: Reconfiguration

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Reconfiguration can be a great way to offer a product that's targeted to meet customer needs in particular channels and regions, but this benefit comes at a price (the cost of reconfiguration). So, how could you determine if reconfiguration is worth its cost?

This tutorial presents a "hands-on" exercise to help you assess reconfiguration's effects on the profitability of a LINKS firm. The approach used in this exercise can also be applied to assess the financial impact of reconfiguration in your own firm.

This brief tutorial consists of two parts:

Starts On Page:

| | | |
|---|---|--------------|
| <u>PART 1: "Hands-On" Exercise</u> | | 2 |
| Questions: | Purpose: | Page: |
| 1a | Calculating product unit costs. | 2 |
| 1b | Calculating percentage-change in product costs. | 2 |
| 2 a-c | Calculating gross margin and gross margin change. | 3 |
| 2 d-e | Calculating break-even sales volumes to maintain previous profitability levels. | 3 |
| 3 | Impact of disposal sales on operating income. | 4 |
| 4 a-b | Other reconfiguration costs and impact on profitability. | 4 |
| <u>PART 2: Exercise Answers and Tips</u> | | 5 |
| • Answers | | 5 |
| • TIPS for Analyzing the Profitability of Your Own Reconfigurations | | 6 |

PART 1: "Hands-On" Exercise

NOTE!

To get the most from this exercise, you should be familiar with P&L statements, inventory tracking, and forecasting. If any of these are unfamiliar, you may wish to work through the appropriate LINKS Tutorial (#1, #2, or #4) before you start this exercise.

Question 1 - Product Costs: Assume that your firm is considering reconfiguring your H11111 product to H44322 in round 6. You will continue to ship this product from your manufacturing plant directly to customers in all regions, and you'll use the same vendors for all sub-assembly components. Assume that component prices will not change from round 5 to round 6.

- a. Calculating Product Unit Cost: Fill-in the missing data, below, and determine the unit cost of the **new** configuration.

| | Old Configuration H11111 (from round 5) | New Configuration H44322 (for round 6) |
|-------------------------|---|--|
| Alpha | \$3.00 | |
| Beta | \$4.00 | |
| Bandwidth | \$10.50 | |
| Warranty | \$11.00 | |
| Packaging | \$10.00 | |
| Gamma | \$18.00 | |
| Epsilon | \$35.00 | |
| Labor | \$30.00 | |
| Production | \$20.00 | |
| Total Unit Cost: | \$141.50 | |

- b. Calculating Percentage Change in Product Cost: Using the data above, calculate the percentage change in product costs you'd realize if you were to reconfigure from H11111 in round 5 to H44322 in round 6.

Question 2 - Gross Margin: Assume that your firm prefers to keep prices for this product the same from round 5 to round 6. Your teammates think that an improved product at the same price will lead to a significant increase in market share in round 6. In round 5, your price for H11111 distributed through Channel 1 was \$320 per unit in every region. Assume no changes in any other variable costs as a result of this reconfiguration.

- a. Calculating Gross Margin: Given the expected revenue per unit (above) and the product costs from Question 1, calculate the gross margin per unit of H11111 in round 5 and the gross margin per unit of H44322 in round 6.

- b. Percentage Change in Gross Margin:
 - (1) What was the change in gross margin per unit from round 5 to round 6 in Channel 1?

 - (2) Express this change as a % change in gross margin per unit from round 5 to round 6.

- c. Calculating Gross Margin Change: Why didn't we include other variable costs (like duties & tariffs, for example) in this calculation of gross margin change?

- d. Calculating Break-even: Assume that your total sales in Channel 1 across all regions last month were 16,200 units. Given your expected decrease in gross margin per unit (calculated in question 2b(1), above), what loss in operating income would you expect if you were to sell 16,200 units in round 6?

- e. Calculating Break-even: Given the gross margin per unit of H44322 you expect to earn in round 6, how many more units of H44322 would you need to sell to earn the same gross margin as selling 16,200 units of H11111?

Question 3 - Disposal Sales: Assume the following ending inventory of H11111 in round 5:

DC1: 33,237 units @ \$161.60/unit

If you were to reconfigure H11111 to H44322 in round 6, what impact (if any) would this inventory of H11111 have on your corporate operating income in round 6?

Question 4 - Other Reconfiguration Related Costs:

- a. What other reconfiguration-related costs might your firms have to pay if you did reconfigure your Product 1 in round 6?
- b. What impact (if any) do these costs have on your firm's profitability?

EXERCISE ANSWERS follow...

PART 2: Exercise Answers and Tips

Question 1:

a.

| | Old Configuration H11111 (from round 5) | New Configuration H44322 (for round 6) |
|-------------------------|---|--|
| Alpha | \$3.00 | \$12.00 |
| Beta | \$4.00 | \$16.00 |
| Bandwidth | \$10.50 | \$23.50 |
| Warranty | \$11.00 | \$20.00 |
| Packaging | \$10.00 | \$14.00 |
| Gamma | \$18.00 | \$18.00 |
| Epsilon | \$35.00 | \$35.00 |
| Labor | \$30.00 | \$30.00 |
| Production | \$20.00 | \$20.00 |
| Total Unit Cost: | \$141.50 | \$188.50 |

b. $(\$188.50 - \$141.50)/\$141.50 \approx 33.2\%$

Question 2:

a. H11111: $\$320 - \$141.50 = \mathbf{\$178.50}$ H44322: $\$320 - \$188.50 = \mathbf{\$131.50}$

b. (1) $\$178.50 - \$131.50 = \mathbf{\$47.00}$ less gross margin in round 6
 (2) $(-\$47.00)/\$178.50 \approx -26\%$ (a 26% decrease in gross margin)

c. Other variable costs, such as duties and tariffs, don't change with a reconfiguration.

d. $16,200 \times \$47.00$ less gross margin per unit = **\$761,400** loss

e. $16,200 \times (\$320 - \$141.50) = \$2,891,700$
 $\frac{\$2,891,700}{(\$320 - \$188.50)} \approx 21,990$ units of H44322

$\underbrace{\hspace{10em}}$
 H11111 Gross Margin

$\underbrace{\hspace{10em}}$
 H44322 Gross Margin

You'd have to sell: $21,990 - 16,200 = \mathbf{5,790}$ more units for the same profit. This is the "break-even" point *after* which you'd start to earn more profit than round 5.

Question 3:

With 33,237 units @ \$161.60/unit, total inventory investment is \$5,371,099. 20% of this inventory investment, \$1,074,220, would be the cost of the disposal sale of this inventory. These disposal sales fixed costs would decrease your firm's operating income by \$1,074,220 in the simulation round in which the reconfiguration occurs.

Question 4:

- a. Aside from the new product costs and disposal sales of any pre-reconfiguration inventory, your firm would have to pay a reconfiguration fee and, possibly, patent royalty fees if your reconfiguration violates other firms' pre-existing patents. You may also increase other fixed costs like marketing to increase market awareness of your new product.
- b. All costs are subtracted from revenues to derive profits. Ideally, you'd like to increase your revenues at a faster rate than you increase your costs (e.g., you spend \$100,000 more on marketing that increases revenues by \$1,000,000).

TIPS for Analyzing the Profitability of Your Own Reconfigurations

1. Start by calculating new product costs and the expected effect on gross margins. How many more units must you sell to break-even with the previous month's gross margin?
2. Then, add other costs you will incur to reconfigure and introduce this new product. Now how many more units must you sell to break-even by region?
3. Compare these "break-even" sales volumes to your demand forecasts. Is it realistic to expect that you can exceed these break-even sales volumes? By how much, in the next round and in the longer-term future?
4. Are there any other considerations that make reconfiguration now a good strategic decision? For example, do you expect a competitor's new configuration to decrease your sales unless you take action now?