

# 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:

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## 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 H11101 product to H44302 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<br>H11101<br>(from round 5) | New Configuration<br>H44302<br>(for round 6) |
|-------------------------|---|--|
| Alpha                   | \$3.00  |  |
| Beta                    | \$4.00  |  |
| Bandwidth               | \$10.50                                       |  |
| Warranty                | \$0.00  |  |
| Packaging               | \$10.00                                       |  |
| Gamma                   | \$17.00                                       |  |
| Epsilon                 | \$24.00                                       |  |
| Labor                   | \$30.00                                       |  |
| Production              | \$20.00                                       |  |
| <b>Total Unit Cost:</b> | <b>\$118.50</b>                               |  |

- 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 H11101 in round 5 to H44302 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 H11101 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 H11101 in round 5 and the gross margin per unit of H44302 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?



## PART 2: Exercise Answers and Tips

### Question 1:

a.

|                         | Old Configuration<br>H11101<br>(from round 5) | New Configuration<br>H44302<br>(for round 6) |
|-------------------------|---|--|
| Alpha                   | \$3.00  | <b>\$12.00</b>                               |
| Beta                    | \$4.00  | <b>\$16.00</b>                               |
| Bandwidth               | \$10.50                                       | <b>\$23.50</b>                               |
| Warranty                | \$0.00  | <b>\$0.00</b>                                |
| Packaging               | \$10.00                                       | <b>\$14.00</b>                               |
| Gamma                   | \$17.00                                       | <b>\$17.00</b>                               |
| Epsilon                 | \$24.00                                       | <b>\$24.00</b>                               |
| Labor                   | \$30.00                                       | <b>\$30.00</b>                               |
| Production              | \$20.00                                       | <b>\$20.00</b>                               |
| <b>Total Unit Cost:</b> | <b>\$118.50</b>                               | <b>\$156.50</b>                              |

b.  $(\$156.50 - \$118.50)/\$118.50 \approx 32.1\%$

### Question 2:

a. H11101:  $\$320 - \$118.50 = \mathbf{\$201.50}$       H44302:  $\$320 - \$156.50 = \mathbf{\$163.50}$

b. (1)  $\$201.50 - \$163.50 = \mathbf{\$38.00}$  less gross margin in round 6  
 (2)  $(-\$38.00)/\$201.50 \approx -19\%$  (a 19% decrease in gross margin)

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

d.  $16,200 \times \$38.00$  less gross margin per unit = **\$615,600** loss

e.  $16,200 \times (\$320 - \$118.50) = \$3,264,300$   
 $\underbrace{\hspace{10em}}_{\text{H11101 Gross Margin}} \quad \quad \quad \underbrace{\$3,264,300 / (\$320 - \$156.50)}_{\text{H44302 Gross Margin}} \approx 19,965 \text{ units of H44302}$

You'd have to sell:  $19,965 - 16,200 = \mathbf{3,765 \text{ more units}}$  for the same profit. This is the "break-even" point *after* which you'd start to earn more profit than round 5.

**Question 3:**

- a. Aside from the new product costs, 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?