

Bill's Building Blocks

Juggling Factory Costs to Hold Product Price

The April 2018 Inflation Rate was 2.5% according to the Bureau of Labor Statistics <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/> But during an excellent plant tour sponsored by Greater North Jersey APICS some of the conversation was around raw material prices up more than 50% and price quotations valid for less than five days rather than the usual 30 days. This was attributed to US imposed trade tariffs on steel and aluminum and on the fear of a much broader trade war with China. How can any manufacturer survive in such a climate?

Consider cost-based product pricing from a Factory perspective:

- Factory material landed cost equals material price plus inbound logistics.
- Labor cost equals the time to make the product times the labor rate of the Factory.
- Cost Of Goods Sold equals material plus labor and overhead, a labor multiplier.
- Markup equals the sum of all other Factory business costs and includes profit.
- The Factory's product price equals the Cost Of Goods Sold plus markup.
- The Factory Customer's landed cost equals Factory price plus outbound logistics.

Here is a per unit numerical example. \$10 direct material landed cost, 0.333 direct labor hours, \$24/hour labor rate, 200% labor overhead, 43% markup, and \$1.38 outbound logistics results in a Customer landed cost of \$50.

$$(\$10+(0.333\text{hr}\times\$24/\text{hr})\times(1+2.00))\times(1+0.43)+\$1.38=\$50.00$$

Now if Factory direct material landed cost increases 50% to \$15, and everything else were to remain the same, then Customer landed cost would become \$57.15, for a 14.3% increase. This is 11.8% higher than the April inflation rate.

$$(\$15+(0.333\text{hr}\times\$24/\text{hr})\times(1+2.00))\times(1+0.43)+\$1.38=\$57.15$$

Not wanting to, or maybe not being able to, pass such a huge increase off on its Customer by raising the Factory price, the Factory would look for some way to juggle its other costs down to compensate for the material cost increase. The choices include substituting lower cost material, reducing labor hours, reducing the labor rate, reducing the labor overhead multiplier, and/or reducing the markup which implies accepting a lower profit margin. Please notice that some of these actions are price additive while other actions are price multipliers. Each of these actions takes time, considerable thought, and maybe some engineering to implement. This new world is not pretty.

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