

## Calculating the Impact of Increased Lead Times of Foreign Purchases

Michael Harding  
Harding & Associates  
802/453-5379 (harding@gmavt.net)

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### (Notice to Attendees: BRING A CALCULATOR)

Foreign prices are often attractive and we are aware of some of the associated costs that increase the cost to use the lower priced products, but what of the costs associated with added lead times and extended surface transport time?

Many companies have sought lower cost goods and components from around the world. Second and third world countries and companies have responded positively for decades. The new quoted prices are often measured against competitive prices and/or standard costs to determine their desirability. Often the difference between foreign and domestic pricing reflect and improvement of 30 to 70 percent. However, the supply professional also recognizes that indirect costs increase with foreign purchases. Among these cost are those associated in dealing with foreign supply transactions. Often, lead times increase when purchasing internationally. What, then, is the cost of these increased lead times to the purchasing company?

When dealing with long and /or unpredictable lead times, supply professionals often add raw material inventory to offset the added lead times and risks. Many companies consent to this practice as inventory is an asset on the balance sheet and it is judged to be cheap insurance. Assisting this decision process is the low cost to carry inventory used by most companies. Recent research and publications, however, indicate that the direct and indirect costs of carrying inventory are much higher than has been believed. At least three noted publications, including the 7<sup>th</sup> edition of The Supply Management Handbook, indicate that an equitable cost to carry inventory ranges between 50 and 75 percent of the purchase price per year.

## The Cost of Carrying Inventory

Recognized Costs	Approximate % per year
Interest rate of money	5 - 10%
Taxes (varies from state to state)	2 - 5
Insurance	2 - 3
Space (occupancy and utilities)	5
Obsolescence reserve	<u>7 - 20</u>
Total	20 - 30%
<b>Unrecognized Costs</b>	
Personnel (warehouseurs, inventory controllers, etc.)	10 -15%
Capital equipment (fork lifts, racks, etc.)	5 - 10
Computation costs (hardware + transactions)	3
Secondary quality costs (reinspection)	5 - 10
Rework, handling damage, additional loss	<u>5 - 10</u>
<b>Total</b>	<b>50 - 75%</b>

Many companies have understated their costs by not considering the indirect costs associated with maintaining inventory. These companies often use the cost of money, interest rates, alternative uses for the cash, and the like to figure their cost to carry inventory and cost of capital. As shocking as these new numbers are, an increasing number of companies are using figures in this range for decision-making and operating purposes.

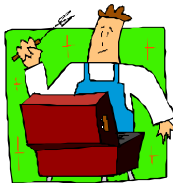
The problem of ballooning inventories and their associated costs show up in increased overhead costs, low inventory turns, poor cash flow, and high obsolescence inventories. Perhaps these costs might be appropriately associated with increased lead times throughout the supply chain.

**The Exercises:**

For the purpose of both exercises, we will assume that the supply professional will carry one week of inventory for each weeks of supplier lead time.

The first compares three quoted prices for an item. Each supplier has different prices and lead times. The instructor will lead the audience through the simple calculations to determine the “delivered” cost of the product. Basically, the price is multiplied by the lead time in weeks which is multiplied by 1.5% (.015) or 75% annual cost to carry divided by 50 production weeks in a year. The desirability of the quoted prices shift. The result can also be a negotiation tool for the supply professional to reduce supplier lead times.

The second exercise is a bit more problematic. The audience is given a scenario involving three suppliers, one of which is in the Far East and offers 40 percent lower prices – far below the standard cost. There are three added scenarios, each of which may or may not change the source selection. The audience is requested to do the calculations, select a source of supply, and to explain the choices.



Cost of Lead Time:  
L/T weeks X price X .015

Company	Lead Time	Prices	Cost of L/T	Cost of Transport	Total
Brady	8 weeks	\$9.50		0.07	
		\$8.75		0.07	
		\$8.05		0.07	
		\$7.00		0.07	
Hot -Spot	12 weeks	\$5.50		.20+.07	
	9 weeks			.20+.07	
	12+1 week			?+.07	Air ship
Dad's	4 weeks	\$8.50		0.07	
		\$7.95		0.07	
		\$7.15		0.07	

**Standard Cost \$8.00**

Many issues come to the surface including the role of price versus total cost to the company, the impact of standard costing and prices on the decision-making process, and how the supply professional's performance is measured.

The exercises look only at the cost of lead times and resulting inventories involved in domestic and, especially, foreign sourcing. They do not consider currency exchange risks, cost of problem resolution, fluctuations in quality, F.O.B. terms, language barriers, national political instability, returns policies, and time differences. Nor do they consider the problems and costs associated with engineering and schedule changes, transit damage, different legal systems, duties, and the like.

Take the estimated costs and risks and add them to the cost of lead time. Now you have a total cost picture of foreign (and domestic) sources. In many cases, the foreign source prices will hold up and the supply professional now has the data to justify those sourcing decisions. Similarly, if the numbers don't add up, the supply professional can help his or her employer avoid making an expensive price versus total cost mistake.