The Toolbox by David Taylor, C.P.M. **April 2007**

Total Cost of Ownership-2001 A "Cost Analysis" Odyssey

For several years I have been trying to find tools or tips on doing cost/spreadsheet analysis for determining Total Cost of Ownership- TCO. I had seen them and read them. The acronym is referred to often, and tossed around as though everyone knows all about it. The secret though, is that it is fast becoming a lost skill. Company after company ignores some of the key components of Total Cost of Ownership. Were this tool applied properly and more frequently, many overseas outsourcing decisions would have not have been made. I wanted to refresh myself on the fine points involved.

Recently in my continued quest to find some straightforward references on the subject, I looked through some of my old copies of ***Inside Supply Management*** and it's predecessor issues, under the former name ***Purchasing Today***. There in several of the **2001** issues—I found my **odyssey** ending. The irony, is that the series was in a monthly column which ISM then called ***Toolbox***—DÉJÀ VU! ***Purchasing Today*** later dropped the column as a regular monthly installment. ISM ran a series of five separate articles that year, starting in May 2001 and finishing in Sept. 2001. The articles are timeless, so I will try to summarize the first which gave an overview of TCO. I include the link to ISM's website, where you go to Publications, Inside Supply Management, Article Indexes, Year 2001, then the column titled Toolbox.

Link: http://www.ism.ws/pubs/ISMMag/2001articleindex.cfm

The five articles are all printable and can be copied and pasted into a word document for file storage and rereading when necessary.

The 1st installment in the May 2001 issue of Purchasing Today was entitled: "Calculating the Total Cost of Ownership" by Sanjit Menezes, then vice president of Anklesaria Group Inc., Del Mar, California.

Total Cost of Ownership (TCO) breaks the costs into four (4) general categories:

1. **Purchase Price**—the amount quoted and later paid to a supplier for the products, services or capital equipment.
2. **Acquisition Costs**—those fees or charges necessary to bring the product, service or equipment to the customer's location. They might include sourcing, 3PL (3rd party logistics services) freight, taxes. You might also have to add brokerage fees, letter of credit banking administration costs, Customs Broker, tariffs, freight forwarder or demurrage charges, air or ocean freight.
3. **Usage Costs—**for products—those costs involved in transforming raw material and components into finished goods and providing the support for those goods through their usable life. For services—any costs involved in the performance of the service that were not included in the purchase cost. For capital equipment all of the costs generated by the operation of the equipment during its life. Examples might include inventory of service or repair parts, service calls, conversion, scrap, warranty, installation, training, downtime, and opportunity costs.
4. **End-Life Costs—**those costs generated by obsolescence, disposal, disconnect/removal/rigger, packing and shipping, cleanup and project termination, downtime costs during transition, and those costs which net against and decrease sale or salvage recovery for the assets.

Building a Total Cost of Ownership Model:

Step 1: Map the process and develop your TCO categories in a broad scope.
Step 2: Determine cost elements for each category.
Step 3: Determine how each cost element is going to be measured.
Step 4: Gather data and quantify costs.
Step 5: Develop a cost time-line.
Step 6: Adjust costs to the present value for comparison purposes.
Step 7: Be sure to identify & list opportunity costs.

- Opportunity costs can be defined as costs of the next best alternative and include: lost sales, lost productivity, and downtime.
- TCO models can be time consuming and costly. They are often used for evaluating large purchases.
- A large project may require upper management buy-in due to company resources needed to gather costs & data.
- Work in a team. This simplifies the data gathering process and adds validity to the final analysis.
- Focus on major costs first, but don't neglect the smaller cost elements since they add up.
- Obtain a realistic estimate of the life cycle. Too short or too long of a life cycle figure, may distort calculations and lead to an improper end decision.

I want to remind everyone, this is but a starting point in the grand scheme of cost analysis. Over the years, I have witnesses many wrong decisions on cost alternatives because key factors or elements of TCO were ignored or discounted entirely as not applicable to the final decision. For example, at one large manufacturer, we purchased forged track chain components for bulldozers from Italy. At one point, a quality problem forced air-freight shipment via 747 jet from Italy, in order to avoid a line-down situation which the company figured at over a $1,000 per hour and more than $10,000 per day. The 747 charter was $27,000 for the shipment. In the end, the chosen option (buying from Italy) cost the company significantly more than they had calculated, because the initial focus was simply on unit piece price as quoted without acquisition costs included for overseas freight. We still had the same freight costs as domestic product inbound from the port of entry, they just refused to consider the overseas ocean freight or air freight as part of the acquisition costs with the inbound freight. We were unable to use Germany and Italy sourcing efficiently for just-in-time manufacturing during the mid 1970's. That forced domestic warehousing of the foreign components to avoid those hidden costs which were initially ignored.

I would like to explore the summary of the other articles in that series in later installments. Again the link for these previous issues of ***Inside Supply Management*** under the former name of ***Purchasing Today*** is as follows: link
http://www.ism.ws/pubs/ISMMag/2001articleindex.cfm
A reminder, you have to enter you ISM ID # as the login name for access to the actual article and then your Last Name as it appears in your ISM registration-- as your password.

This other link though slightly different also gets you to the same spot:
http://www.ism.ws/pubs/ISMMag/results.cfm?MetaDataID=126

For those of you that are unsuccessful in obtaining or viewing the actual article, contact me. I have the original article which could be scanned and forwarded plus I have word versions of the articles that could be provided which I was able to download off the ISM archive. Again a reminder, these articles and resources are available to all ISM members as an additional member benefit.

June 2001 issue Toolbox article is: Total Cost of Ownership—Inventory Materials by Mary Lu Harding, C.P.M., CPIM, CIRM, then president of Harding and Assoc., Lincoln, Vt.

The same author then continued the final three articles in the series:
July 2001 issue Toolbox article is: Total Cost of Performance—Services

August 2001 issue Toolbox article is: Total Cost of Ownership—MRO

September 2001 issue Toolbox article is: Total Cost of Ownership—Capital Equipment.

In each of the articles are various examples of the cost models with sample spreadsheets. Well-written, easy to digest, and still very appropriate even today. I highly recommend their reading as a refresher to sharpen your skills. Till next month—enjoy this odyssey! – dt