Determining Total Supply Chain Costs

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Objectives of this Session

• Expand your definition of cost/value

• Identify the factors that matter

• Learn tools to measure cost

• Bolster your confidence to hunt down costs and create savings
Signs of a Problem

• Your organization demands year-over-year price reductions from suppliers

• Purchasing is measured by price alone

• Discussion of other savings is not welcome or is discounted
Your Supply Chain

Get Specific

Map Out Flow

Add Identifiable Costs: Money spent
Inventory
Quality
Time
The Final Picture

Suppliers

Transit

US

Customers

Receive

Store

Use

Purchase price

Cost to do business

Lead time

Freight

Handling losses

Transit time

Inventory

Quality costs
- Inspection
- Fall-out
- Rework

Wasted Time
- Admin.
- Handling

Freight

Handling losses

Transit time

Warranty

Delayed payment
Cost Elements

• Actual Cash Outlay
• Inventory
• Time
• Quality
Cost of Inventory

1. Inventory dollars

2. Inventory carrying cost

\[
\frac{\% \text{ / yr}}{52} = \% \text{ / wk}
\]

\[
\% \text{ / wk} \times \text{WOH} = \text{Carry Cost}
\]
Cost of Time

People’s Time:

\[
\text{Hourly Salary} \quad = \quad \frac{\text{Cost}}{\text{Minute}}
\]

\[
60
\]

\[
\text{Annual Salary} \quad = \quad \frac{\text{Cost}}{\text{Minute}}
\]

\[
124,800
\]
Cost of a Process

- Identify the steps of the process
- For each step, identify
  - What is done
  - Who does it (by title, not name)
  - How long it takes (on average)
- Calculate the cost of people’s time
  Use the median salary of their job grade
- Add other associated costs
Supplier - Related Costs

Any supplier-related cost will fall into one of these categories:

– Direct Cost

– Performance Cost

– Policy Cost
Direct Costs

• Actual payment or savings
  – Freight
  – Discounts

• Calculate
  – Cost-per-unit
  – Average several and use mean value
Example: Freight Cost

\[
\text{Total Freight Charge} = \frac{\text{Freight Cost}}{\text{# of Units Shipped}}
\]
Performance Costs

• Measure Performance
  – Quality
  – Delivery
  – Lead Time

• Hard $$ or Soft $$
  – Hard dollars are your actual costs
  – Soft dollars are an approximation
Approximations

..... Are valid as long as:

1. The formula makes sense
   – It is relevant to the issue
   – It can be calculated easily

2. It is a fair comparison between suppliers or items
Performance in Hard Dollars

1. Determine process cost / event

2. Determine # of non-performance events

3. Multiply # of events X cost of each

4. Divide total cost by total quantity purchased in same time period
Performance in Soft Dollars

1. Measure performance in percent

2. Use non-performance percentage as a price-adder

➢ Quality: Reject rate
➢ Delivery: Percent NOT on time
Example: Delivery

- Percent Not-On-Time = 12%
- Price of item = $10.00

Delivery Factor = $10.00 \times 0.12 = $1.20
Other Performance Issues

• For performance issues not in percent, establish a weighting based on their level of importance to you:

• Example: Lead time
  – Establish a tax-per-week of lead time
  – Start with 1%/week and evaluate weight
Example: Lead Time

- Lead Time = 10 weeks
- Start with 1% / week penalty
- Price of item = $10.00

\[
\text{Lead Time} = \$10.00 \times 10 \text{ wk} \times 0.01 \\
= \$10.00 \times 0.1 \\
= \$1.00
\]
Policy Costs

• What does your organization value?
  – Management preferences
  – Disadvantaged businesses
  – Green Buying

• Issues made clear and public
Calculations

1. Define the value of the issue
   - Establishes a boundary
   - Usually in percent
   - Done by sponsor of the issue

2. Credit those who qualify
   - Credit the boundary value
Example: Recycling

- Boundary value = 5%
- Purchase price = $10.00

Policy Credit = - [$10.00 \times 0.05] = - $0.50
Pulling It All Together

• For purchased materials or services calculate Unit Total Cost

• For internal processes calculate Total Total Process Cost
Unit Total Cost

1. List all of the factors important to you

2. Sort: Direct / Performance / Policy

3. Establish a formula for each
   Calculate the price-adder per unit

4. Sum the price + all adders & credits
# Unit Total Cost Calculations

<table>
<thead>
<tr>
<th>Factor</th>
<th>Acme Widgets</th>
<th>No-Pain Co</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quoted Price</strong></td>
<td>$10.00</td>
<td>$12.00</td>
</tr>
<tr>
<td><strong>Cost Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freight ($/Qty)</td>
<td>+ .09 ($8.95/100)</td>
<td>+ 0 (Sweep)</td>
</tr>
<tr>
<td>Discounts (Promt pay)</td>
<td>- .20 (2%10 Net 30)</td>
<td>- .12 (1%10 Net 30)</td>
</tr>
<tr>
<td><strong>Performance Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality (% Rejects)</td>
<td>+ 1.30 (13% Rejects)</td>
<td>+ 0 (No Rejects)</td>
</tr>
<tr>
<td>Delivery (1- % OT)</td>
<td>+ 1.50 (85% On Time)</td>
<td>+ .60 (95% On Time)</td>
</tr>
<tr>
<td>Lead Time (1% / week)</td>
<td>+ 1.00 (10 Weeks)</td>
<td>+ .48 (4 Weeks)</td>
</tr>
<tr>
<td><strong>Policy Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling (5%)</td>
<td>- .50 (Yes)</td>
<td>- 0 (No)</td>
</tr>
<tr>
<td>Heroics (1%/ event)</td>
<td>- 0 (None)</td>
<td>- .36 (3 Events)</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>$13.19</td>
<td>$12.66</td>
</tr>
</tbody>
</table>
Be Inclusive

• Open process to the whole organization

• Let them tell you what they value

• Negotiate an appropriate measurement
You Will Get ..... 

• More Cooperation

• Less argument

• Cross-functional understanding
  – What matters
  – How suppliers are selected
Benefits

Internal:

➢ Justification for the best supplier
➢ Appropriate ownership of issues
➢ Cross-functional education
➢ Consensus on supplier selection
Benefits

External

- Right message to suppliers
- Increased supplier motivation
- Good target costs
Summary

- Begin
- Iterate as necessary
- Be inclusive
- Don’t fear to experiment