Summary. The traditional price-based relationship among customers and suppliers is changing. Long-term relationships are being built based on total cost, trust, innovation, quality, and flexibility. To build and improve relationships, tools are needed, many different tools!

As a supplier measurement tool, a Cost of Poor Quality approach provides direct insight into the areas that have the greatest opportunity to drive non-value-added costs down.

Supplier Measures: Cost of Poor Quality. As stated earlier, suppliers more often than not get blamed for nonconformances and customer dissatisfaction, yet at least fifty percent of the time the root cause of the problem is miscommunication between the customer and the supplier. This communication can be as simple as what day to ship the product and how to package it for shipment, or as complex as raw material formulations and processing parameters.

Requirements cover multiple aspects of the product or service. In defining the requirements, the customer attempts to describe the desired end result. The supplier has to determine the raw materials and the process used to achieve the end result. There are numerous requirements that must be considered. Product specifications define performance requirements as expected by the customer. Process specifications define parameters of the manufacturing process that must be controlled to produce a product. Service specifications define non-product parameters such as methods of delivery, certificates-of-analysis, and engineering support.

As a customer, once you have defined all of your requirements, review them with your supplier, preferably during the request for quote. Experience indicates that the supplier will not only have clarification questions, but will also have a few additions. Because the supplier has the expertise in the process and the customer knows the product, it only makes sense that the requirements are reviewed together. This valuable communication step not only saves costs associated with rework, scrap, and downtime, it also gets the end users their product or services faster.

Clearly defined requirements help to communicate performance targets for suppliers, but how do you know if your suppliers are consistently meeting requirements? To know the quality of the goods and services you are receiving requires building a system to capture important data
and turn it into usable information - for both the customer and the supplier. A measurement system is an important tool needed to monitor performance.

**Tool used:** Supplier measurement using Cost of Poor Quality (COPQ) Approach.

**Purpose:**
- To provide feedback to the suppliers
- To determine areas to deploy resources for improving the business process / relationship with suppliers
- To reduce non-value-added costs
- To identify Best-Value suppliers

**Process:**
- Flowchart overall macro-operations process from receipt of material to customer use
- Identify the non-value activities, then flowchart each of these (micro-operations levels)
- Determine the amount of time required for each of the non-value activities
- Establish labor rates
- Assign cost to each non-value-added activity
- Monitor and report to supplier the costs associated with non-value-added activities

**Payoff:**
- Identifies non-value-added activities
- Assigns costs to non-value-added activities
- Unit of measure ($) is easily recognized throughout your organization and your suppliers’
- Feedback improves customer-supplier relationships
- Reduces overall operating costs

Performance information such as conformance to specification, nonconforming material costs, and level of service can be used to compare suppliers, monitor improvement, and determine ‘Best Cost’ suppliers. Best Cost means those products that have the lowest overall cost through the entire system.

Best Cost looks at the total cost of doing business with a supplier, the purchase order price along with the associated costs of poor quality to utilize the product through the supply chain. These costs of poor quality, or non-value-added costs, include incoming inspection, lab analyses, rejecting product, re-receiving product, manufacturing wastes (scrap, rework, downtime, reduced efficiencies) and customer complaints.

Identify and determine your costs for these non-value-added activities. To do so, flowchart your macro-operations process as in Figure 1. Categorize each step as Best Cost, Appraisal Cost, Internal Failure Cost or External Failure Cost.
Best Cost identifies the process the way it should work when supplier-provided products and services meet your requirements.

Appraisal Costs are defined as costs incurred in detecting products and services that do not conform to requirements. Examples of supplier appraisal costs include receiving or incoming inspections or audits and acceptance testing.

Internal Failure Costs are the costs incurred when a nonconforming product or service is detected in your manufacturing process before it is shipped your customer or furnished as a service. Examples of internal failure costs associated with suppliers are corrective action requests, product holds, product review, product rejections, product returns, scrap, downtime, rework, re-inspection, extra operations and reissuing purchase orders.

External Failure Costs are the costs incurred when a nonconforming product or service is detected after it is shipped or furnished to the customer. Examples of external failure costs associated with suppliers are returns, complaints, penalties, market withdrawals, warranty claims, and lost sales.
Continue by flowcharting in greater detail, each appraisal and failure step, as in Figure 2. The flowcharts follow both product and paperwork through the system and allow you to assign costs to the associated labor and waste.

**Receiving Flowchart**

[Flowchart diagram]

Figure 2
To assign costs to each non-value-added activity, estimate the time it takes to complete each step. Once you know the amount of labor involved you can calculate a cost by multiplying the time by the labor cost per hour. Work with your Cost Accounting group to determine labor categories appropriate to your business.

You now have all of your non-value-added activities identified, flowcharted, and a cost assigned to them. As these activities occur, a tracking system captures the occurrence by supplier.

This supplier cost of poor quality measurement system monitors the frequencies of non-value added activities. The frequency of each type of activity during a specified time frame multiplied by its associated cost provides the non-value-added costs. These costs added to the original purchase price yield the Total Cost of the product purchased from a supplier. From this information, you begin to see who your Best-Cost suppliers are.

Numerous supplier measurement systems are set up to report in pounds rejected, percentage of defective or defects per million. While these are useful indicators to measure supplier performance, they fail to provide cost information that is necessary to make sound supplier management decisions that impact the profitability of a company. Quantifying the cost of poor quality helps focus both the customer and the supplier on improving those things that will generate the greatest return.

**Conclusion.** Developing mutually beneficial relationships with your suppliers is critical to any company. Today, we look at the entire supply chain to deliver high-value products and services to our customers. The key to building excellent customer-supplier relationships is communication. Communication can't be one-way; it must be a 360° degree exchange of information. The COPQ model presented here can help to build information flow and trust. They help to improve the quality of products and services you receive from your supplier and therefore reduce total cost.

Where can you go for more tools to assist you in developing strong customer-supplier relationships? The most important resources available to you are people - network with your colleagues. They can share not only published material but they can share experiences, both positive and negative. What worked for them and what didn’t? By listening to the experiences of others you can pick and choose the tools that will work best for you and your company.

**REFERENCES**


Customer-Supplier Division of the American Society for Quality, http://www.asq.org/cs