

**Materials And Supply Metrics:
What to Measure and How to Measure It**

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Abstract. A common cry today is, "If you can't measure it -- you can't manage it." This emphasis on measuring organizational effectiveness was started by W. Edward Deming in the early 1980s after proving its usefulness in Japan in the 1960s and 70s.

Many organizations have neglected to apply these powerful techniques to purchasing and supply management. Do not make that same mistake!

Business is global and only world-class organizations will remain competitive.

This workshop: (1) explains the value of metrics; (2) introduces critical supply metrics; and, (3) helps participants plan their own materials and supply metrics.

Examination of the Supply Chain. One way to look at the **supply chain** is that it is -- the route that materials and supplies move along from their point of origin to their final point of use. Materials management's role is to facilitate the movement of these materials and supplies in the most effective, efficient, and timely manner possible. ISM's Materials Management Group (MMG) defines materials management as "that structure that makes the major materials function the responsibility of one person. In manufacturing, those functions are: production and inventory control, purchasing, traffic, transportation and warehousing."

Metrics. This the measurement of those things that tell the story about important activities in the organization and, in our case, the materials' function. Not everything that can be measured is important. It is tempting to want to have many metrics. The reality is if you have too many metrics, you lose focus and find it difficult to deal with all of them effectively. Usually, it is hard for one person to manage more than 10 metrics well at one time. The trick is to figure out what are the most important item that should be measured at any given time. Metrics are important to an organization because they provide the kind of feedback needed to successfully manage. Imagine flying an airplane blind. You cannot see the ground or know your altitude. You do not know how much fuel you have. You do not know your direction. Would anyone do this? Probably not, but many organizations operate at least partially blind, most of the time, because they have few, if any, metrics to guide them.

Some items are what we might call *critical success factors*. These items can often be answered with a yes or no. Such as:

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| 1. Do you have a good cost savings program in place? | YES or NO |
| 2. Are appropriate benchmarks being used? | YES or NO |
| 3. Do you have a written, up-to-date ethics policy? | YES or NO |
| 4. Have priorities been established using ABC method? | YES or NO |
| 5. Are you buying key items based on forecasts? | YES or NO |
| 6. Are all purchases under centralized control? | YES or NO |
| 7. Are modern methods of order placement utilized? | YES or NO |
| 8. Has your supplier base been reduced by at least 80%? | YES or NO |

Usually, we do not think of metrics as being yes or no questions, but rather as an on going process of measuring things like cost savings or errors elimination. Now let us look at some other kinds of metrics.

Other Metrics

- **Cost Savings**

All organizations should have a vigorous cost reduction program. Manufacturing firms spend, on average, 60 percent of their sales dollar for goods and services (the range is from 25 percent to 86 percent). Service organizations such as banks, schools and government spend from about 15 percent to 25 percent of their total revenue for goods and services. In any case, whether, it is 15 percent or 60 percent it is a large sum of money.

According to *Business Week*, the average corporation pays about 26 percent income taxes. Therefore, a \$100 savings would add \$74 to the bottom line. While, in a good year, a \$100 sale adds about \$6.50 to the bottom line. For example, \$100,000 savings adds \$74,000 to the bottom line, while a \$100,000 sales increase adds only \$6,500 to profits. A \$100,000 savings, however, in a non profit organization or government is like adding \$100,000 to revenues.

Materials management is well positioned to be a big part of any cost reduction effort since it has responsibility for purchasing and movement of such goods. A world class materials management organization should return between 200 percent and 500 percent of its operating expenses in cost savings each year. This means that if your operating budget is \$1,000,000 you should return \$2,000, 000 to \$5,000,000 in savings.

Service organizations are more likely to be closer to 200 percent, while manufacturers can achieve 500 percent or more annual savings. In fact, Toyota has a goal of taking at least 30 percent of the cost out of each successive new model. New models come out every four years. And they usually make it. Other companies report making savings of at least 2 percent to 3 percent per year in reduced purchase cost until they reach 23 percent -- before the savings run out (reaches a diminishing return so low it is not worth pursuing).

Many world class organizations report that their **value analysis** (VA) efforts return \$26 in savings for every \$1 dollar they invest in VA. While **standardization and simplification programs** lead to savings from \$3.50 to \$12.50 for every dollar invested in these efforts.

It is recommended that there be annual cost reduction goals for each of the following:

- Materials management organization,
- Each department such as purchasing, warehousing and traffic,
- For each person, such as buyers or warehouse supervisors.

The *metric* for each of the above, of course, would be dollars saved measured against cost saving goals for the year.

To keep people from putting off working on their cost savings goals, we recommend that each person be required to submit a monthly progress report.

We further recommend that their cost savings performance be an important part of their annual review.

- **Organizational**
 - Number of rush orders processed each month,
 - Percent of the net sales dollar spent each month for goods and service,s compared to the previous year.
- **Purchasing department**
 - Monthly department actual operating cost compared to budget,
 - The percent of purchases from small and disadvantaged suppliers compared to monthly goal.
- **Buyer**
 - Total amount of negotiated contract compared to total spending for the month (this should be at least 65% to 80% of the total monthly spend),
 - Objectives met verses objectives for the year,
 - Actual cost savings verses goal,
 - Percent of on time deliveries.
- **Inventory**
 - Annual inventory turns (turns being the number of times that inventory is replaced each year) – rule of thumb
 - A items 12 to 52 turns
 - B items 6 to 12 turns
 - C items 1 to 4 turns
 - The ratio of inventory on hand as a percent of sales and compared to the base year.
- **Warehousing**
 - Direct labor per case received or shipped,
 - Inventory write off due to shortages or damage.
- **Transportation** (The management of one's own carriers.)
 - Fleet operating cost verses base year and or budget,
 - Repair cost compared to budget.

- **Traffic** (The purchase of outside transportation services such as UPS.)
 - Air freight charges compared to budget or base year,
 - Number of carriers used compared to base year.

Conclusion. In establishing a metrics program we have some decisions to make. First, what should be measured? When deciding what to measure it is good to ask where does it hurt? In other words, if we are having trouble with supplier on time delivery or supplier quality, then that is where it hurts. This then would be a good thing to measure. Our second decision is how we will measure the extent of the problem and hopefully the improvement over time. The third decision is which benchmarks to use as a comparison. If on time delivery is our problem, is 95 percent on time delivery what we want to achieve or will the benchmark be 100 percent? Fourth, who will be responsible for the measurement and for seeing that improvements are made? Finally, we need to brainstorm to find ways to improve the situation that we are measuring.

Whenever possible, the metrics results should be posted on regular bases as a reminder of our progress. What we want to see is a trend line that shows improvement.