

CAUSE AND EFFECT

There's a difference between a process metric and a results metric. Learn to use them the right way.

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Materials management is a metrics-driven discipline. Inventory levels, delivery performance, obsolescence, and cycle times are all numbers near and dear to the practitioner. We understand these concepts but do not always understand their related metrics.

There are two types of metrics: process and results. Process metrics describe cause, and results metrics measure effect. By understanding the cause and effect relationship between the underlying process and resulting performance, the practitioner can design a system of process metrics that will yield the desired result.

Let's take delivery performance. With today's customer focus, senior management beats the drum of delivery reliability and increasingly includes shipping performance as a factor in bonus calculations. This focus flows to the shop floor where supervisors, planners, and expeditors are told in no uncertain terms they need to assure on-time delivery.

The results are predictable. Expedite lists are created and shop personnel spend their days stepping over each other as they chase orders with the next ship date. Confusion and waste result, instead of world-class performance. World-class performance is the result of world-class process. On-time delivery is not a process metric.

Take the example of high-tech manufacturer ABC. On-time delivery performance was less than 50 percent, and overdue backlog was measured in weeks of production. At the time we became involved, the oldest order on the books was more than a year overdue. While senior management was committed to achieving world-class delivery performance and everybody understood the importance of the problem, repeated attempts to cure it had failed because there were no process metrics in place. Delivery performance remained dismal, and the production control community spent its days working the expedite lists.

THE PROBLEMS

Using classic total quality management (TQM) data collection and analysis techniques, we helped the team identify and document the following problems:

- Schedules were misaligned and not maintained
- Incomplete kits abounded
- Launch and run techniques were typical, and there was no concept of demand-pull.

In other words, they had a typical shop floor. We helped them establish and deploy some simple process metrics.

Schedules. All planners were directed to manage the daily schedule and resolve mismatches. Time was set aside each day when the planners were prohibited from attending meetings.

- The process metric: We assigned ownership of each item in the item master to a specific planner, then queried material requirements planning (MRP) to display mismatches by planner.

Incomplete kits. The stockroom was directed not to issue incomplete kits. A 2 percent overage was issued with each kit to cover for process yield losses.

- The process metric: Upon completing a kit pull, the stockroom determined if it was complete or incomplete. Incomplete kits were held in a staging area until the shortage cleared. Incomplete kits were tabulated daily by the stockroom.

Input/output control. A simple throughput measure was adopted for each kit. Daily kit issues were to be equal to completions the previous day.

- The process metric: The number of pin insertions drove capacity in the electronic assembly, so we focused on the number of pins in the kit. Each day we counted the number of pins issued, the number of pins completed, and the number of pins in work in process (WIP).

Overall results against these process metrics were reviewed weekly. Over the course of thirteen weeks, schedule performance improved dramatically. Overdue backlog plummeted, and on-time delivery performance rose to over 90 percent. The new process-oriented metrics approach became institutionalized, and by the 26-week mark, overdue backlog had been eliminated completely.

The lesson is simple. Manage your business with process metrics, and evaluate your business using results metrics. Process metrics will drive the desired results that results metrics will confirm. ♦

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