

Meaningful Metrics

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"You cannot manage what you cannot measure," yet the majority of warehouses that we inspect have either no metrics at all or have measurements that no one really uses. The second situation is even worse than the first, because it signifies a failed attempt by management to create a meaningful measurement system.

Some Tips For Effective Metrics Management

- Define your goals for the metrics program.
- Be a user and not just a collector of measurement.
- Crawl before you walk or run.
- Balance your approach. Quality, service and productivity measurements should be in your program
- Maintain employee support.

Why Measure?

Without metrics, there is no way to track continuous improvement. Without metrics, emerging problems often are not exposed until they become serious problems. Without metrics, it is difficult to let workers know if their work meets the expectations of management. Finally, metrics are essential for comparing quantity (productivity) and quality (customer satisfaction).

Metrics are a particularly effective way to control and explain service failures. When errors take place, the frequency and nature of the error is measurable. When corrective action is taken, metrics can confirm whether or not the action taken solved the problem. When a service failure can be prevented, metrics can prove the effectiveness of the preventive procedure. A measurement system can be used to assign the correction to a given person and to establish a completion date for the action.

What Should We Measure?

Some warehouse operators are looking for ways to get more out of metrics or measuring techniques. Metrics should be used to test four areas:

- ① Reliability
- ② Flexibility
- ③ Cost
- ④ Asset utilization

Reliability metrics are a measure of percentages of on time delivery, fill rates, and accuracy. Order cycle time is the best measure of flexibility. Cost measurements relate to productivity in orders or lines per labor hour. Some operators may measure freight costs as well as warehousing costs. Asset utilization metrics relate to space productivity as well as utilization of storage and handling equipment. Inventory turns are also an important measure of asset utilization.

Individual Vs. Group Measurement

Today's technology, including bar-code scanning and voice recognition, makes it relatively easy to measure individual performance as a byproduct of the recording function. Although it is easy to track the progress of individual performance, it is more accurate to measure group performance. When individual performance is emphasized, more experienced workers may try to "beat the system" by grabbing those orders that are easiest to fill.

Metrics To Control Service Failures

There are at least four kinds of internal errors:

- ① Shipping
- ② Receiving
- ③ Billing
- ④ Miscellaneous

It is important to note that some errors can be attributed to situations outside of the distribution center. These must be identified prior to measuring performance.

Shipping errors can be divided into these categories.

- *Wrong item ordered* is an error that could originate with the customer or the sales representative.
- *Keyed incorrectly* is an error that originates in the office but may be blamed on the warehouse.
- *Picking errors* clearly originate in the warehouse.
- *Defective errors* are caused by faulty product, and sometimes this problem is concealed.
- *Miscellaneous* is the catch all for all other errors.

Receiving errors can occur in four subcategories, some of which can be attributed to external sources.

- ① *Incorrect quantity* may be caused by faulty paperwork or inaccurate counting.
- ② *Incorrect marking* is a problem with product that arrives at the warehouse, but must be identified and corrected to avoid further errors.
- ③ *Inbound damage* can be to cartons or to product,

and is usually caused by carrier mishandling. Regardless of cause, a claim is filed with the carrier.

- ④ *Overages and shortages* are always the result of errors made by the party shipping to the warehouse.

Your receiving department must identify all of these errors before product is accepted and put away. Failure to do so insures that the problems will be inherited by your warehouse.

Billing errors can be either internal or external. It is important to identify the source of the errors. For example, an order might contain a wrong quantity, but the error originated in the customer's office.

Certain kinds of service failures are readily measured internally. For example, back orders are a reflection of management's ability to keep the right product in the warehouse. Data on in-stock availability can be of particular value in measuring the service capabilities of a warehouse because they do not rely on customer feedback.

Unfortunately, some errors are detected only when the customer complains. Therefore, the ratio of complaints may vary according to the reactions of customers. It is essential to remember that some customers will react to errors by quietly moving their business to a competitive warehouse or carrier.

Inventory Performance Measurements

Warehouse managers have the ability to improve inventory management. There are at least four inventory performance measurements that are worthy of consideration. They are as follows:

- ① *Inventory turns* are measured by showing a ratio of cost of goods sold to the average inventory in dollars. This also can be figured in units rather than dollars. Warehouse managers should be sensitive to product that has not moved for a long time. These products should be disposed of either by discount sale or destruction.
- ② *Days of supply* and
- ③ *Months of supply* are two ways to learn how the inventory relates to current usage. Again, a distribution center manager should have the authority to isolate and remove overstocks that interfere with effective operation of the center.
- ④ *Total inventory investment* should be compared over time, since a substantial unexplained inventory growth can be a sign of impending trouble.

Since most inventory checks today are handled by cycle counting, metrics typically are applied to this activity. The most commonly used measurement relates the total number of cycle counts to the number that were counted with no adjustment.

Productivity Measures

Warehousing productivity is usually expressed in lines or units per hour. Some warehouses measure productivity in pounds or dollars. Accountants love dollars, but distortion can occur when there is substantial difference in dollar value among the items in the warehouse.

What is the best method for calculating products by labor hour? We propose that the most accurate picture is maintained when the total units moving in and out of the warehouse are divided by the total number of hours ex-

pected by every person who supports the warehousing function, including the manager and the janitor.

While dollars can be misleading in tracking materials handling productivity, they are useful in measuring staffing effectiveness. For example, if a ratio is maintained that shows dollar sales shipped from the warehouse per full-time employee, declining volumes would warn managers to reduce staff.

Overtime

Few warehouse operations operate with no overtime expense, but excessive overtime is usually a sign of poor decisions in staffing. A continuing measurement of overtime expense both in dollars and as a percent of total labor cost is a valuable barometer of operations efficiency.

Safety

The most common measurement is the calculation of days or hours worked without a lost time accident. When accidents do occur, records should be kept on the cause and steps that should be taken to prevent recurrences. Another advantage of this metric is that it provides a rebuttal in the event of a citation from OSHA. For example, you might have a routine OSHA inspection as a result of a complaint about propane odor filed by a visiting truck driver. The OSHA inspector approved current propane lift truck usage but issued a citation and proposed a substantial fine for failure to have safety railings on a mezzanine. In appealing the citation, it will be very effective to demonstrate that your warehouse has worked 37,265 man days without a lost time accident.

Implementation

How are the metrics that you gather applied to improve productivity? If you do nothing, your staff will not take the measurement process seriously and they are likely to stop maintaining records just to see if anyone notices. A regular review of your metrics program should request feedback from staff regarding the usefulness of metrics gathered, what new measurements should be added, and what existing ones should be eliminated.

A good way to use metrics is in conjunction with management meetings during which improvement plans are considered. Each improvement plan should be accompanied by an action plan which includes the name of the responsible person, the status of the action, the completion date and the expected savings or results.

When you refine your metrics program, do so with your corporate goals as a frame of reference. If your prime goal is to reduce costs, the measurements will reflect this. If your prime goal is to increase sales, the metrics might be quite different. Meaningful metrics can become a very valuable management tool. But meaningless measurement may be as bad as no measurement at all.

A READER WRITES...

"In response to your October 2002 *Warehousing Forum* issue question: **Have you turned down a new customer?** The answer is yes. We had a client on board and ready to go when we pulled the plug. The customer wanted to store household goods in mobile storage units, and we realized that this introduced a potential insurance and operating risk as there was no way of knowing what was in the units." **Tom Miralia, Distribution Technology**